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STEEL

ESTABLISHED 1882

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PRODUCTION · PROCESSING · DISTRIBUTION · USE

How Calcium-Manganese-Silicon Improves Steel Castings . . .

CALCIUM-MANGANESE-SILICON combines three powerful deoxidizers in one alloy. It is more effective as a deoxidizer and scavenger of steel than separate alloys containing these elements. Added to cast steel in the ladle it dissolves readily in the molten metal, cleanses the steel rapidly and thoroughly, removes dissolved gases, and forms a low-melting, fluid slag. Pinholes and porosity are minimized. Clean, sound castings with improved ductility are the result.

Ask to have one of our metallurgists call and explain further how calcium-manganese-silicon as a ladle deoxidizer improves steel castings. He will gladly help make your use of this and other "Electromet" ferro-alloys profitable. Electro Metallurgical Company, Unit of Union Carbide and Carbon Corporation, 30 East 42nd Street, New York, N. Y. In Canada: Electro Metallurgical Company of Canada, Limited, Welland, Ontario.

Items of Interest about other "Electromet" Ferro-Alloys

Zirconium Improves Green Sand Castings — Green sand castings treated with zirconium show fewer pinholes, smaller grain sizes and less segregation of impurities at the grain boundaries. This produces a uniform texture free from hard spots, and improves machinability.

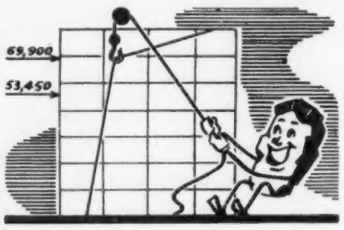
Calcium-Silicon Simplifies Pouring of Steel Castings — Calcium-silicon used as a ladle deoxidizer cleanses the steel and increases its temperature and fluidity. Steel treated with calcium-silicon flows freely right to the end of the pouring period. This simplifies pouring practice.

Silico-Manganese Helps Make Clean, Uniform Steel at Lower Cost — Silico-manganese deoxidizes steel quickly and thoroughly, leaving it clean and ready for tapping in 10 to 15 minutes. This rapid deoxidation, together with the low carbon content of silico-manganese, saves furnace time and permits close control of final analysis. Thus clean, uniform steel is obtained at lower cost.

Medium-Carbon Ferromanganese Shortens Furnace Time — When medium-carbon ferromanganese is used instead of standard ferromanganese in the production of low-carbon steel, oxidation of the bath need not be so severe because medium-carbon ferromanganese adds

about one-sixth as much carbon to the bath as the standard grade. As a result, the heat can be made in from one-quarter to one-half hour less time.

Vanadium Increases Strength and Toughness of Nickel-Steel Castings — The averaged values of a series of tests showed that the addition of 0.10 per cent vanadium to



a nickel steel raised the yield-point strength from 53,450 to 69,900 lb. per sq. in., and increased the Izod impact from 35.5 to 74.3 ft-lb. Elongation and reduction of area were also slightly increased.

• • •

If you want more information about these and the many other "Electromet" ferro-alloys and metals and the service that goes with their purchase, write for the booklet, "Electromet Products and Service."

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As the Editor Views the News

■ STEEL production moved up 2 points last week (p. 19) to 62 per cent of ingot capacity, the highest level this year. Demand is brisk from diversified sources (p. 75) and increased consumption in the near future is indicated in some directions. Scrap prices reflect a bullish aspect. . . . STEEL's survey (p. 15) shows the supply of railroad rolling stock is the smallest in more than 25 years, with a strong possibility that a car shortage will develop this fall. Despite unsatisfactory net earnings by the railroads, a rise in car orders seems due later this year. . . . About 24,000 tons of steel (p. 16) will be required for fabrication of 25,500 steel bins ordered by the department of agriculture last week for the storage of shelled corn.

• • •

Manganese From Cuba

More than 27 per cent of imported manganese ore last year came from Cuba for the reason (p. 27) that improved methods permit conversion of low-grade Cuban ore into 50 per cent manganese sinter. These methods are held as suggesting an approach to commercial concentration of low-grade American manganese ores of similar quality. . . . Two unusual export orders have been booked by American manufacturers. One (p. 16) is for 76 electric industrial lift trucks and 156 industrial batteries for shipment to Russia; the other (p. 21) is for a 2¼-mile belt conveyor system for Chile. . . . Army air corps last week (p. 18) placed airplane orders aggregating $100,000,000 bringing the aircraft industry's backlog to more than $300,000,000. . . . Newest trade association (p. 18) is the Formed Metal Plumbing Ware association.

• • •

Peace-Time Planning

Edward R. Stettinius Jr., chairman, United States Steel Corp., is chairman (p. 25) of the new war resources board created last week. In a national emergency the board would become an executive agency similar to the powerful war industries board of World war days. . . . Howard Coonley, president, National Association of Manufacturers, believes (p. 26) that business will derive encouragement from the recent congressional trends but warns that the effects of ten years' experimentation with our economic machinery cannot be overcome until those experiments are abandoned or adjusted to experience. . . . Machinery and Allied Products institute finds (p. 20), in contradiction to testimony before the temporary national economic committee, that ample opportunity exists for economic recovery through private enterprise.

• • •

Polishing Plows

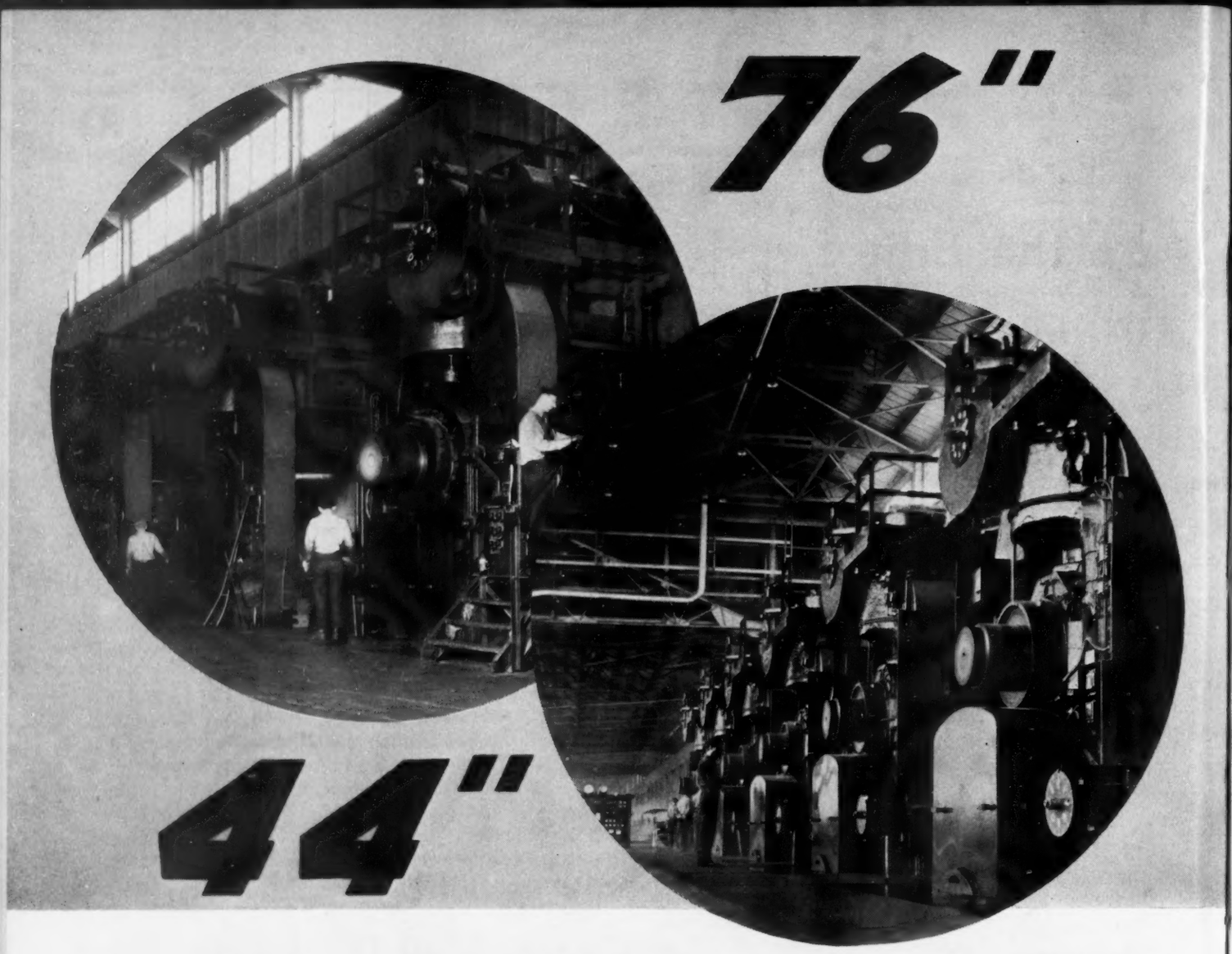
Inland Steel Co. (p. 40) has placed in operation its five new 150-ton open hearth furnaces. Bath temperatures are measured by an electric eye sighted through a tube immersed in the bath, air flow keeps slag and molten metal out of the tube. Many other interesting features are incorporated. . . . Weirton Steel Co.'s new structural mill (p. 48) is featured by by-passes around principal bottlenecks; these facilitate production. Instead of making roll changes in the mill, they are made on spare stands in pits, so that only minutes are consumed in replacing the stands. This same idea has been worked out in other ways. . . . A high finish is necessary (p. 42) to permit plows to scour readily when in use. Grinding and polishing operations, therefore, predominate in their manufacture.

• • •

Handling System

Jigs, fixtures and attachments are vital allies to modern machine tools, says Guy Hubbard, STEEL's machine tool editor. He cites some examples (p. 38) of efficient production made possible by specially designed accessories. . . . Tin plate containers are manufactured by one company (p. 55) in an old building not originally designed for such operations. This handicap has been overcome through development of an ingenious materials handling system which permits low-cost production of a wide variety of products in large volume. . . . Improvements in design and operation of open-hearth furnaces which have resulted in substantial savings in the cost of producing steel ingots (p. 44) include a suspended arch, a new type door and a bulk-type charger.

E C Kreutzberg



Two Modern Strip Mills are Teamed Together for Better Service to Inland Customers

In 1932 Inland installed one of the country's first wide continuous strip mills. This 76" unit now has a new running mate . . . . one of the country's highest speed mills, capable of rolling a mile of steel a yard wide in 2½ minutes.

This new 44" mill increases Inland's flat rolled steel capacity 45,000 tons per month, greatly expanding our facilities for prompt service to customers. Its higher speed and numerous improved mechanical features also permit more effective control over quality and uniformity of output.

Temperature control, for example, is made automatic as the hot strip enters the finishing stands, by an electric pyrometer which "looks" at the steel, records its temperature and sounds a warning if there is any variation.

Important also to steel buyers is the fact that this new mill is matched with equally modern steel making and finishing equipment . . . all of it new within the past few years, from blast furnace and open hearths to cold finishing mills, annealing furnaces, tin mills and galvanizing department.

We are confident that these new facilities now enable us to produce, not only more, but better sheets and strip. Your nearest Inland office will make this improved service promptly available to you.

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SHEETS STRIP TIN PLATE BARS PLATES FLOOR PLATES STRUCTURALS PILING RAILS TRACK ACCESSORIES REINFORCING BARS

Better Rail Earnings, Carloadings May Spur Steel Buying by Carriers

■ IN SEARCHING for outlets likely to further recent encouraging gains in steelmaking, railroads appear to offer potentialities for substantial business, yet prospects for appreciably greater demand the remainder of this year cannot be described as bright.

At the same time, the incentive to place heavier orders for rails, fastenings, cars and locomotives has increased since a year ago. Since this accompanies a moderate betterment in earnings, possibilities of improved demand may be considered somewhat more favorable.

A number of roads are considering car buying programs. However, while it seems probable some revival in car building will occur later in the year, the improvement may not come sufficiently early to have a marked influence on steel consumption before 1940.

The reason for acquiring additional freight-carrying equipment is best indicated by the recent forecast of the Association of American Railroads that the peak in loadings this fall will be between 775,000 and 800,000 cars, or 75,000 more than last year. At this level the threat of a car shortage in some localities becomes evident.

More Cars Required

Since loadings generally decline rapidly after October, the pinch—should it develop—would be brief, but need for replacement of cars which steadily are becoming obsolete still would exist. A similar situation existed in 1936 and was followed by increased purchases of equipment. Loadings this fall are not expected to match the figures of three years ago, but supplies of rolling stock today are smaller than at that time. In fact, they are the smallest both in number and total carrying capacity in more than 25 years.

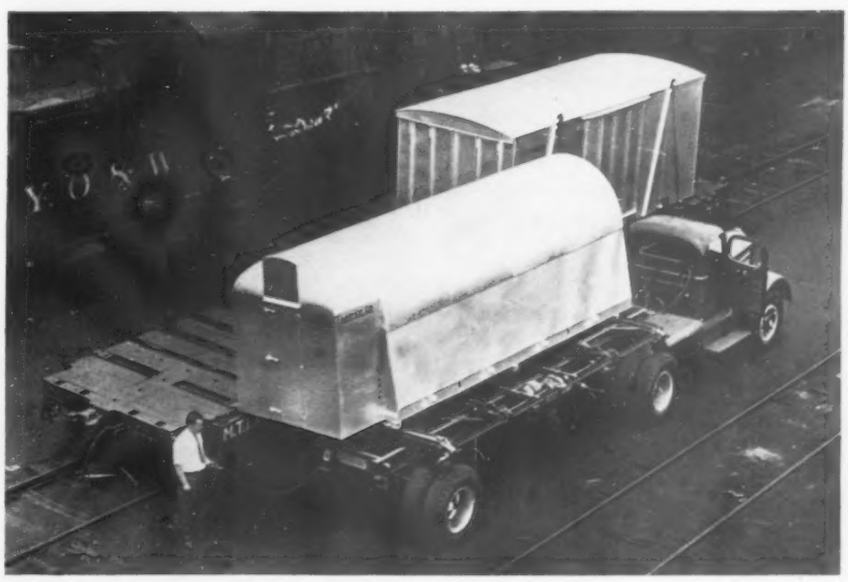
Based on recent figures for total cars in service and the number of surplus and bad-order units that can be made available for use, it is obvious that a permanent return to the volume of traffic prevailing in 1936 and 1937 would necessitate acquisition of more cars, either through repair work on damaged equipment or the building of new units. Naturally the roads will be in a better position to finance such work with revenues derived from the heavier volume of freight movement that makes this rehabilitation mandatory.

There is an obvious relationship between railroad revenues and expenditures for material and supplies. An extended relapse in freight traffic, such as was experienced after 1929, intensifies the retrenchment in spending for equipment, since it is possible to subsist for a time on the surplus of cars and locomotives accumulated in more prosperous years.

When recovery forces were prominent in 1935, 1936 and 1937, it became desirable to bolster dwindling supplies of rolling stock. The 1938 recession found the railroads again clamping down on expenditures. That time, however, there was no large surplus of cars to tide them over a period of slow business, and the current and prospective upturn in traffic now must be met by providing additional equipment.

Freight cars awaiting or under-

Aids Rail, Truck Traffic Co-ordination



■ **Transfer of a 4000-gallon loaded steel milk tank from rail car to truck was effected in 90 seconds by a handling device with push button control, recently developed by Benjamin F. Fitch, Greenwich, Conn., and president, Motor Terminals Inc. Demonstrated last week at the New York World's fair, the transfer system is designed to co-ordinate long-haul railway service with short-haul truck movements, return to the railroads much traffic diverted to motor carriers in recent years. Wide World photo**

Freight Cars, Demand and Railroad Income

	1939	1938	1937
Weekly carloadings*	587,104	545,670	729,513
Peak loadings, second half	775,000† to 800,000	700,000 to 725,000	825,000 to 850,000
Cars owned by railroads‡	1,631,079	1,720,000	1,730,000
New cars ordered (seven mos.)	9,642	8,021	47,015
Net operating income*	$165,262,517	$71,185,513	$297,341,777

*First six months. †Estimated. ‡June 1.

going repairs June 1 numbered 232,884. Many of these can and will be returned to service, but the total also included 188,000 cars equipped with arch bar trucks which cannot be used in interchange after Jan. 1 and which in many cases are so old they are marked for early retirement.

A considerable number of cars in the hands of the carriers are more than 25 years old. These not only involve high maintenance cost but also are less economical to operate than the modern freight car from the standpoint of carrying capacity in relation to weight. Low alloy steels have played a prominent part in reducing freight car weight and the cost of freight train movement.

New freight cars ordered the first seven months of 1939 numbered 9642, barely 20 per cent ahead of the 8021 placed the like period of 1938. This compares with 47,015 in the 1937 months, 35,338 three years ago and 6833 four years ago. With the total cars owned by railroads declining at the rate of nearly 60,000 units annually the past ten years, recent additions of new cars have been well below replacement needs, despite their greater unit capacity.

Rail Orders Increasing

Demand for rails and fastenings has increased markedly this year, although tonnage still is relatively small. Orders for rails announced the past three quarters by major roads totaled 555,000 tons, compared with 351,000 tons the year before.

It has been evident for several years that railroad earnings have been well below the level necessary to permit carrying out a really comprehensive rehabilitation program. In this respect 1939 is no exception. Gross operating revenues the first six months increased 10.3 per cent over the corresponding 1938 period. Close control over operating expenses is indicated in a rise of only 5.2 per cent in these charges. As a consequence, net railway operating income increased 132 per cent.

This impressive advance in operating income loses much of its significance when it is considered that, with the exception of last year, the total is the smallest since 1933. After fixed charges there was a net deficit of $93,000,000 the first six months, against a deficit of $181,253,596 a year ago. Certainly this does not encourage a liberal spending policy.

Until earning power of railroads shows decided improvement it is held unlikely any sharp boom in material and equipment buying will develop. Plans to provide easy credit to finance such purchasing are seen as without avail so long as the carriers are unwilling to incur additional indebtedness.

Collapse of plans proposed in congress for the financing of railroad equipment construction is not regarded as a serious blow to the outlook in this industry. At no time were such plans alone seen as likely to break the jam in car and locomotive buying, since private financing is considered adequate to accommodate those roads seriously interested in acquiring additional equipment. It is doubted whether the government could have made its terms sufficiently more attractive than those offered by private capital—either through loans or leases—to induce the carriers to take advantage of federal funds regardless of the status of traffic and earnings.

As a consequence, it is thought probable the extent of improvement in freight car buying in coming months will be dictated in largest measure by the trend in carloadings and in revenue. So far as repair activity is concerned, the indicated upturn in freight traffic the remainder of the year suggests that car shops will maintain steady or higher operations, if the threatened shortage of equipment is to be avoided.

If the current business revival subsequently gives definite signs of permanency, the fourth quarter may be expected to see a rising trend in new car construction; for the immediate future steelmakers doubt they can look to the railroads for a major influence on production.

FIRST HALF EQUIPMENT EXPORTS TOTAL $3,809,744

United States exports of railroad equipment during the first six months of 1939 totaled $3,809,744, according to the transportation division, department of commerce.

The exports, which included locomotives and parts, rolling stock and parts, railway signals, car heating equipment and air brake equipment, decreased in value by $4,698,327 from the first six months of 1938.

June exports totaled $860,468 compared with $614,453 in May. Shipments to noncontiguous countries in June showed a slight increase.

24,000 Tons Steel For U.S. Corn Bins

■ DEPARTMENT of agriculture last week awarded contracts totaling $3,611,520 for 25,500 steel bins for storing shelled corn to six midwestern manufacturers. Bins will have total capacity for 43,279,900 bushels of grain, range from 1000 to 2000 bushels in size, cost an average of 9½ cents per bushel of capacity.

Steel required will approximate 24,000 tons; 22,000 tons will be galvanized sheets and 2000 tons will be angles.

In calling for bids for this order of bins, agriculture department officials intimated the government may purchase bins to store an additional 50,000,000 bushels if it proves the crop makes that much storage capacity necessary. Although last week's crop estimate was revised downward from earlier forecasts, steel company agriculture engineers believe there is a strong possibility more storage bins will be purchased this fall.

Contracts awarded specified delivery must begin within 15 days and be completed within 60 days. Successful bidders: Martin Steel Products Co., Mansfield, O.; A. N. Eaton Metal Products Co., Omaha, Nebr.; Edwards Mfg. Co., Cincinnati; Sioux Steel Co., Sioux Falls, S. D.; Butler Mfg. Co., Galesburg, Ill.; and Columbia Steel Tank Co., Kansas City, Mo.

The purchase is part of the department's resealing and renewal program designed to hold the 257,000,000 bushels of 1937 and 1938 corn off the market and under government loan. Bins will be delivered at country points.

Russia Places $250,000 Industrial Truck Order

■ Automatic Transportation Co., Chicago, manufacturer of electric industrial trucks, tractors and cranes, has received a large group order for electric industrial trucks, valued at $250,000, from the Russian government.

It consists of 78 Automatic electric industrial lift trucks and 156 industrial batteries, and is believed to be the largest single order placed in this industry since the World war.

Steel Taxes, Payrolls Rise; Output And Return on Investment Shrink

■ TAXES levied on the steel industry have exceeded net earnings before taxes in five of the years since 1929. In 1938, the tax bill for a large group of steel companies was $98,600,000, or 18 per cent more than the net earnings available for taxes; after paying taxes the industry lost nearly $14,000,000.

The 1938 tax bill was within 4 per cent of the 1929 total, although output was 50 per cent below 1929. In both 1936 and 1937, the industry's taxes were greater than in 1929, although production in both years was lower than in 1929.

These figures compiled by the American Iron and Steel institute show that in the past ten years taxes have taken an increasing share of the net earnings after paying all other costs of operation, thus leaving a smaller share available for stockholders and for adding to surplus.

Taxes Per Ton Exceed 1929

Taxes also have increased sharply in relation to payrolls and per ton of finished steel produced. The 1938 tax bill was equal to $5.18 per ton of finished steel produced, 78 per cent more than in 1929.

During 1938 steel companies paid 50 per cent more taxes per dollar of wages than in 1929. In 1929 steel taxes represented 14 cents per dollar of wages; in 1938, they represented 21 cents per dollar of wages. Last year taxes were equivalent to $254 for each worker employed.

In 1909 the industry employed 279,000 workers, paid $188,000,000 in wages. Finished steel production in that year was 19,645,000 gross tons.

In 1937, most recent good year for production, output was 87 per cent above 1909, employment was 84 per cent higher. Total wages, however, were almost 330 per cent above 1909.

Although production in 1938 was only 7 per cent above the 1909 total, 386,000 workers were employed, 39 per cent more than in 1909. They received $461,000,000 in wages, or 146 per cent more than was paid in 1909.

Reflecting the inexpensiveness of steel and the large investment in properties required, the dollar value of gross sales is relatively low compared with investment. In periods of normal business, it takes the steel industry 22 months to turn over its investment, to take in from sales as much money as is invested. By comparison, other manufacturing industries turn over their investment in an average of ten months.

During the depression years, the steel industry's investment was turned over at a rate of once in 50 months; in other industries the average rate was once in 17 months.

From 1927 through 1936, including some good as well as lean years, the industry earned an average of 3 per cent on investment.

Steel's return on investment was slightly above the average for other industries in 1929 and 1930. In other years since 1927, however, steel either earned a lower return than all other industries or lost relatively more. In 1932 and 1933, the industry showed a net loss before providing for interest charges. In 1931, 1934 and 1938, the industry was in the black before paying interest but showed a net loss after interest was paid. Other pertinent figures:

Total Investment

1909	$3,286,000,000
1938	4,470,000,000

Investment Per Ton Finished Steel

1909-1918, average	$150
1919-1928, average	175
1929-1938, average	195

Investment Per Dollar of Profit

1909-1918, average	$15
1919-1928, average	.26
1929-1938, average	.60

Capitalization

	1925	1938
Stocks	$2,380,000,000	$2,609,000,000
Bonds	1,315,000,000	953,000,000
Total	$3,695,000,000	$3,562,000,000

Assets

Steel Industry	Per cent
Plants and properties	75
Inventories	17
All other assets	8
All other industries	
Plants and properties	45
Inventories	25
All other assets	30

Return on Steel Investment

	Per cent
1909-1918	8.2
1919-1928	5.1
1929-1938	2.4

Ratio of Profits to Steel Sales

	Annual Gross Sales	Profit Margin Per cent
1909-1918	$1,692,000,000	14.5
1919-1928	2,648,000,000	7.5
1929-1938	2,020,000,000	4.0

Stockholders Outnumber Employes

Stockholders, 1938	519,000
Wage earners, 1938	386,000

During the past five years steel stockholders have received an average of $155 per year in dividends, or about one-eighth the average annual earnings of wage earners.

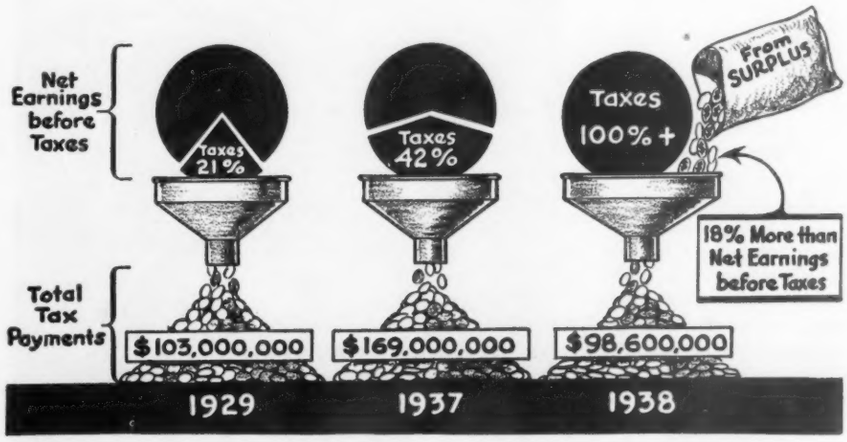
$10,000 To Establish Average Job

Properties and equipment	$7300
Materials and supplies	1800
All other funds	900
Total	$10,000

Billion Dollars for New Equipment

1935	$140,000,000
1936	216,000,000
1937	320,000,000
1938	140,000,000
1939	126,000,000
Total	$942,000,000

Taxes Take More of Steel Earnings



■ How the tax collector has dipped into steel's earnings: In 1929, taxes were 21 per cent of net income before taxes; in 1937, a good year, they were 42 per cent; in 1938, taxes were 18 per cent more than net earnings before taxes. From American Iron and Steel institute's "Dollars Behind Steel"

Plumbing Ware Group Organized

■ FORMED METAL PLUMBING WARE association has been organized as a result of a recent meeting in Cleveland attended by makers of sheet iron and steel plumbing fixtures finished with porcelain enamel.

Companies producing this type of ware and represented at the meeting were: Alliance Porcelain Products Co., Alliance, O.; Briggs Mfg. Co., plumbing ware division, Detroit; Central Mfg. Co., Connersville, Ind.; Davidson Enamel Products Inc., Connersville, Ind.; Enamel Products Co., Cleveland; General Porcelain Enameling & Mfg. Co., Chicago; Ingram-Richardson Mfg. Co., Frankfort, Ind.; Mullins Mfg. Corp., Youngstown Pressed Steel division, Warren, O.

Several manufacturers of iron and steel and porcelain enamel frit who will be associated with the group in its co-operative effort are: American Rolling Mill Co., Middletown, O.; Carnegie-Illinois Steel Corp., Pittsburgh; Chicago Vitreous Enamel Product Co., Cicero, Ill.; Ferro Enamel Corp., Cleveland; Great Lakes Steel Corp., Detroit; O. Hommel Co., Pittsburgh; Porcelain Enamel & Mfg. Co., Baltimore; Republic Steel Corp., Cleveland; and Youngstown Sheet & Tube Co., Youngstown, O.

To Outline Policies

Announcement regarding personnel and policies will be made later. The association will be affiliated with the Porcelain Enamel institute and will have an office with the latter at 612 North Michigan avenue, Chicago, also one at 602 Southern building, Washington.

Use of formed metal fixtures, finished in porcelain enamel, it is stated, is expanding rapidly because of light weight and modern design of bath tubs, lavatories and sinks made by the process. This development has occurred since beginning of the depression and at present is one of the most productive branches of the metal stamping and enameling field. With large housing programs planned for the near future, an even brighter outlook is in prospect, according to a member of the new association.

1000-Foot Bridge To Link Manufacturing Plants

■ An industrial bridge 1000 feet long will be constructed this fall at the Mansfield, O., plant of Westinghouse Electric & Mfg. Co. Believed to be the longest of its kind, it will be used to transport range and refrigerator parts between manufacturing aisles and enameling plant. Passing over two city streets, a creek and railroad tracks, the bridge will eliminate a half mile of surface trucking.

In addition to 3100 feet of chain and 1500 feet of belt conveyors it will contain an aisle for light trucking and pedestrian use. Cost is estimated at $135,000.

AVIATION

AIR CORPS PLACES RECORD $100,000,000 IN ORDERS

■ QUICKENING its expansion program, army air corps last week awarded contracts for military planes, engines and equipment costing approximately $100,000,000. Largest peacetime aeronautical orders in war department history, these awards bring the aircraft industry's backlog well over $300,000,000.

Most substantial contract went to Glenn L. Martin Co., Baltimore, for two-engined bombardment craft costing $15,815,000. Other bookings for bombers: North American Aviation Inc., Inglewood, Calif., $11,771,000; Consolidated Aircraft Corp., San Diego, $8,485,000; and Boeing Aircraft Co., Seattle, $8,090,000. Options were taken on additional Consolidated and Boeing units in amount of $5,400,000.

Signed to build training planes were North American Aviation, $4,033,000; Vultee division of Aviation Mfg. Corp., Downey, Calif., $2,986,000; Stearman division of Boeing, Wichita, Kans., $388,000. Lockheed Aircraft Corp., Burbank, Calif., received an order for interceptor pursuit planes costing $4,845,000.

Largest award for engines went to Pratt & Whitney division of United Aircraft Corp., East Hartford, Conn., $12,320,000. Other engine allotments: Wright Aeronautical Corp., Paterson, N. J., $7,000,000; Allison Engineering division of General Motors, Indianapolis, $2,275,000; and Lycoming division of Aviation Mfg. Corp., Williamsport, Pa., $270,000.

To spread these orders as widely as possible over existing capacity, strict application of the competitive bidding system was circumvented under a provision of the 1926 procurement law which permits contracts with any of three lowest bidders in event a competition is based on blueprint designs rather than completed models. Air corps officials believed it necessary to take advantage of this provision when congress failed to pass a new procurement law relaxing competitive bid requirements for airplanes and engines.

Major portion of air corps buying this fiscal year now is thought completed. Still needed, however, are certain types of pursuit and observation ships. At Wright field, Dayton, O., seven bids on single-engined interceptor pursuits in lots of 300 were opened last week, with Seversky Aircraft Corp., Farmingdale, N. Y., apparent low bidder. Consolidated Aircraft appeared low among six manufacturers submitting bids on observation planes in lots up to 400.

Shrink Steel With Dry Ice

■ Shaft for a 30,000-kilovolt-ampere, 13,800-volt generator was shrunk with dry ice before the 93-inch thrust collar was fitted. Some hours before the fitting the 34-inch hollow bore shaft was packed with dry ice, reducing its outside temperature to 23 degrees Fahr. Generator is one of three being constructed by Allis-Chalmers Mfg. Co., Milwaukee, for Chickamauga dam of TVA

Seven Months' Gear Sales 21 Per Cent Above 1938

■ July gear sales were 1 per cent below those for June but 34 per cent ahead of July, 1938, according to American Gear Manufacturers' association. For the first seven months this year, sales were 21 per cent above the comparable period in 1938.

July Ingot Output Largest Since March

■ July steel ingot production, 3,288,949 gross tons, was second highest this year, exceeded only by 3,405,370 tons in March, according to the American Iron and Steel institute. This compares with 3,125,288 tons in June, and 1,974,317 tons in July, 1938.

Output was at 54.50 per cent of capacity in July, 53.35 per cent in June, and 33.29 per cent in July, 1938. Weekly average output in July was 744,106 tons, against 728,505 tons in June and 446,678 in July, 1938.

In the accompanying table the institute has revised figures for the first six months this year so that they represent companies producing 98.67 per cent of the 1938 total. Previous figures covered 97.31 per cent.

Steel Corp. Shipments Off 7.7 Per Cent in July

■ United States Steel Corp.'s finished steel shipments in July amounted to 676,309 tons, 57,124 tons or 7.78 per cent less than 733,433 tons in June. Compared with 441,570 tons shipped in July, 1938, the increase was 234,739 tons, or 53.1 per cent.

Seven months' shipments this year totaled 5,069,575 tons, 1,617,651 tons larger than 3,451,924 tons in the first seven months last year, a gain of 46.7 per cent.

District Steel Rates

Percentage of Ingot Capacity Engaged In Leading Districts

	Week ended Aug. 12	Change	Same week 1938	Same week 1937
Pittsburgh	52	+ 2	30	83
Chicago	56	None	33.5	86
Eastern Pa.	43	+ 2	30	69
Youngstown	55	+ 1	43	78
Wheeling	79	None	54	94
Cleveland	80	+ 7	38	85
Buffalo	60.5	+ 2.5	42	86
Birmingham	70	None	50	96
New England	70	+ 2	40	65
Cincinnati	57	+26	65	89
St. Louis	54.5	+ 7	30	77
Detroit	64	None	52	100
Average	62	+ 2	40	84

U. S. STEEL CORP. SHIPMENTS

(Inter-company shipments not included)

(Tons)

	1939	1938	1937	1936
Jan.	789,305	518,322	1,149,918	721,414
Feb.	677,994	474,723	1,133,724	676,315
March	767,910	572,199	1,414,399	783,552
April	701,459	501,972	1,343,644	979,907
May	723,165	465,081	1,304,039	984,097
June	733,433	478,057	1,268,550	886,065
July	676,309	441,570	1,186,752	950,851
Aug.	.....	558,634	1,107,858	923,703
Sept.	.....	577,666	1,047,962	961,803
Oct.	.....	663,287	792,310	1,007,417
Nov.	.....	679,653	587,241	882,643
Dec.	.....	694,204	489,070	1,067,365
Adj.*	.....	‡30,381	†77,113	†40,859
Total	.....	6,655,749	12,748,354	10,784,273

*Yearly adjustment. †Deduction. ‡Increase.

Steel Ingot Statistics

	Calculated Monthly Production—All Companies —Open Hearth— Gross tons	Per cent of capacity	—Bessemer— Gross tons	Per cent of capacity	—Total— Gross tons	Per cent of capacity	Weekly production, all companies, gross tons	Number of weeks in month
1939	**Reported by Companies which in 1938 made 98.67% of Open-Hearth and 99.90% of Bessemer.**							
Jan.	3,026,710	54.96	147,642	27.26	3,174,352	52.48	716,558	4.43
Feb.	2,792,267	56.15	196,382	40.16	2,988,649	54.72	747,162	4.00
March	3,210,481	58.30	194,889	35.99	3,405,370	56.30	768,707	4.43
April	2,768,269	51.91	205,977	39.28	2,974,246	50.78	693,297	4.29
May	2,752,549	49.98	170,326	31.45	2,922,875	48.32	659,791	4.43
June	2,937,622	55.08	187,666	35.78	3,125,288	53.35	728,505	4.29
July	3,047,423	55.46	241,526	44.70	3,288,949	54.50	744,106	4.42
7 mos.	20,535,321	54.49	1,344,408	36.35	21,879,729	52.95	722,342	30.29
1938	**Reported by Companies which in 1938 made 98.67% of Open-Hearth and 99.90% of Bessemer.**							
Jan.	1,634,224	30.28	99,941	18.27	1,734,165	29.17	391,459	4.43
Feb.	1,572,009	32.26	125,443	25.39	1,697,452	31.63	424,363	4.00
March	1,846,517	34.21	157,687	28.82	2,004,204	33.72	452,416	4.43
April	1,786,942	34.19	132,100	24.93	1,919,042	33.34	447,329	4.29
May	1,669,455	30.93	131,422	24.02	1,800,877	30.30	406,519	4.43
June	1,513,715	28.96	119,128	22.48	1,632,843	28.36	380,616	4.29
July	1,846,319	34.29	127,998	23.45	1,974,317	33.29	446,678	4.42
7 mos.	11,869,181	....	893,719	....	12,762,900	....	421,356	30.29
Aug.	2,340,363	43.36	196,739	35.96	2,537,102	42.68	572,709	4.43
Sept.	2,440,192	46.80	206,937	39.15	2,647,129	46.09	618,488	4.28
Oct.	2,882,827	53.41	223,158	40.78	3,105,985	52.25	701,125	4.43
Nov.	3,357,167	64.23	201,196	37.97	3,558,363	61.81	829,455	4.29
Dec.	2,971,834	55.19	158,912	29.11	3,130,746	52.79	708,314	4.42
Total	25,861,564	40.71	1,880,661	29.20	27,742,225	39.65	532,072	52.14

Percentages of capacity operated for 1939 are calculated on weekly capacities of 1,243,153 gross tons open-hearth ingots and 122,248 gross tons bessemer ingots; total, 1,365,401 gross tons; based on annual capacities as of Dec. 31, 1938, as follows: Open-hearth ingots, 64,817,994 gross tons; bessemer ingots, 6,374,000 gross tons.

Percentages of capacity operated for 1938 are calculated on weekly capacities of 1,218,342 gross tons of open-hearth ingots and 123,514 gross tons of bessemer ingots; total, 1,341,856 gross tons; based on annual capacities as of Dec. 31, 1937, as follows: Open-hearth ingots, 63,524,356 gross tons; bessemer ingots, 6,440,000 gross tons.

PRODUCTION

■ STEELWORKS operations last week advanced 2 points to 62 per cent, highest since November, 1938. Eight districts increased production and four were unchanged. A year ago the rate was 40 per cent; two years ago 84 per cent.

Youngstown, O.—Addition of one open hearth raised the rate 1 point to 55 per cent.

Cleveland—Increased 7 points to 80 per cent, a new high for the year.

Chicago — Steady at 56 per cent. Four producers have increased output but complete suspension of ingot production by another during new equipment installation balanced the gain.

Birmingham, Ala. — Unchanged at 70 per cent, with 16 open hearths active.

St. Louis — Increased 7 points to 54.5 per cent, with two open hearths added at the beginning of the week and a third at midweek.

Detroit — Held at 64 per cent for the fifth week, 16 open hearths being in production. Six additional furnaces will be lighted this week, advancing the rate 23 points to 87 per cent.

New England — Rose 2 points to 70 per cent. Indications are for a slight improvement this week.

Buffalo — Advanced 2.5 points to 60.5 per cent, highest since late 1937.

Central eastern seaboard—Gain of 2 points to 43 per cent resulted from increased production by the leading interest.

Pittsburgh — Up 2 points to 52 per cent, with further rise expected this week.

Wheeling — Continued at 79 per cent for fifth week.

Cincinnati — Resumption by four open hearths of American Rolling Mill Co., after suspension for mill installation, raised the rate 26 points to 57 per cent.

"Must Build More Ships To Gain World Trade"

■ Ships under construction to American Bureau of Shipping standards Aug. 1 numbered 113, of 599,733 gross tonnage. July 1 the number was 122, tonnage 630,340; and Aug. 1, 1938, 124, tonnage 519,965. During July work was started on 12 vessels aggregating 4335 gross tons.

J. Lewis Luckenbach, bureau's president, points out the present program for 50 new ships a year for ten years will not be sufficient to make the American fleet competitive in world trade and says increased efforts will be necessary. The program is expected to reduce average age of ships from the present 20.6 years to 14.6 years in a decade.

Activities of Steel Users, Makers

■ FRETZ-MOON Tube Co., Butler, Pa., J. M. Barton, president, has sold rights to manufacture butt-weld pipe by its patented method to companies in many parts of the world. Licensees in the United States include Republic Steel Corp., Cleveland; Youngstown Sheet & Tube Co., Youngstown, O.; Bethlehem Steel Co., Bethlehem, Pa.; Spang-Chalfant & Co. Inc., Pittsburgh.

Foreign rights have been granted the following: Stewarts & Lloyds Ltd., Birmingham, Eng., for the British empire, except Canada; Page-Hershey Tubes Ltd., Toronto, for Canada; United Steel Co., Germany, for Continental Europe; Nippon Steel Co., Tokyo, for Japan. Mills in England, Australia and Germany already are producing pipe under these licenses.

♦

General Alloys Co., Boston, is casting an 8-ton stainless steel "monument to news" for facade of the Associated Press building, New York. Plaque will be 17 x 22 feet. In flat but bold detail it will depict five supermen at work with modern facilities for collecting and disseminating news — camera, telephone, wire photo, teletype and pad and pencil.

♦

Inland Steel Co., Chicago, has issued licenses for the manufacture of Ledloy, to Heppenstall Co., Pittsburgh, and American Rolling Mill Co., Middletown, O.

♦

Ferro Enamel Corp., Cleveland, which previously sold color oxide as an agent for other firms, will manufacture the material for sale in this country and for distribution through its foreign subsidiaries, starting about Sept. 1. About $250,000 worth of oxide will be produced annually.

♦

Lamson & Sessions Co., Cleveland, has appointed the J. J. Brown Sales Co., Los Angeles and San Francisco, its sales representative in California.

♦

Hanson-Van Winkle-Munning Co., Matawan, N. J., manufacturer of electroplating equipment and supplies, has appointed Carl F. Miller & Co. Inc., Seattle, its distributor in Washington.

♦

Production of cream separators in the Richmond, Ind., plant of International Harvester Co. will begin Aug. 15, officials have announced. Over 90,000 square feet of floor space in the Richmond unit has been vacated for installation of machinery shipped from the Milwaukee plant and for new equipment. Remainder of the plant will continue to manufacture seeding machinery.

♦

Atlas Press Co., Kalamazoo, Mich., has again increased capacity with a plant addition which provides new working area of 17,000 square feet. An addition of approximately the same size was completed in November, 1937.

♦

Speed nut division of Tinnerman Stove & Range Co., Cleveland, has completed negotiations with Simmonds Aerocessories Ltd., Shell-Mex house, Strand, London WC2, England, for the manufacture and sale of patented speed nuts in England and on the Continent.

♦

Bucyrus-Erie Co., South Milwaukee, Wis., has appointed Clarence L. Boyd Co., with headquarters at Guthrie, Okla., and a branch office at 17-19 West Pottawatomie, Oklahoma City, distributor in Oklahoma for its line of shovels, dragline, clamshells and lifting cranes.

♦

Central Iron & Steel Co. has moved its Philadelphia offices from the Stock Exchange building to 1142 Broad Street Station building. R. H. McCracken is district manager and Paul Driscoll, assistant.

Private Investment Opportunities "Ample"

■ Ample opportunity still exists for private citizens to invest savings in financing America's economic recovery through private enterprise, states the Machinery and Allied Products institute, Chicago, in a study on *Saving and Investment in the American Enterprise System*, just published.

The institute's analysis questions testimony presented before the temporary national economic committee to the effect there is not now, nor will be, sufficient opportunity for the absorption of America's volume of savings in private enterprise; that it is therefore desirable and necessary for the government to initiate and finance such volume of public projects as will absorb savings in excess of those required by private enterprise.

To support its conclusion, the study cites the potential demand for capital goods in many fields. Attacking the argument that this country's decreasing population trend augurs no good for private investment, the institute points out that the number of families is increasing. It says that although the rate of population increase may fall sharply, the number of families, or consuming units, will have nearly doubled by 1980.

Reducing Friction, Lengthening Life of Cars

■ **Measuring the surface smoothness of a Chrysler crankshaft by means of the profilometer, an instrument with a sharp point which explores the surface and records deviations from absolute smoothness electrically on dials. These bearing surfaces are now superfinished, bringing scratches remaining on the surface down to a few millionths of an inch in depth**

FINANCIAL

RUSTLESS STOCKHOLDERS APPROVE BANK LOAN

■ DIRECTORS of Rustless Iron & Steel Corp., Baltimore, at a special stockholders' meeting, were authorized to negotiate a loan of $1,750,000. Of this total, $1,300,000 will be expended for plant improvements and $250,000 to meet bank loans maturing this year. The balance of $200,000 will be added to working capital.

ALLEGHENY LUDLUM PROFIT LOWER IN SECOND QUARTER

Allegheny Ludlum Steel Corp., Pittsburgh, reports second quarter net profit of $147,740, equal to 7 cents a common share. In the first quarter net profit was $206,582, making the indicated net profit for the first half $354,322, equal to 19 cents a common share. In the June quarter last year net loss totaled $561,932.

DIVIDENDS DECLARED

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., 75 cents on common and 87½ cents on preferred, payable Aug. 31 to record Aug. 8.

Timken Roller Bearing Co., Canton, O., 50 cents a share on capital stock, payable Sept. 5 to record Aug. 16.

Otis Elevator Co., New York, 25 cents a common share and regular quarterly of $1.50 a share on preferred, payable Sept. 20 to record Aug. 25.

Harbison-Walker Refractories Co., Pittsburgh, 15 cents a common share, payable Sept. 1 to record Aug. 11. Like amount was paid June 1.

Monarch Machine Tool Co., Sidney, O., 30 cents a share on capital stock, payable Sept. 1 to record Aug. 21. Last payment was 20 cents on June 1.

Acme Wire Co., New Haven, Conn., 25 cents a common share, payable Aug. 15 to record July 31.

Continental Can Co., New York, $1.12½ a share on $4.50 preferred stock, payable Oct. 2 to record Sept. 11.

M. A. Hanna Co., Cleveland, quarterly of $1.25 a share on $5 cumulative preferred stock, payable Sept. 1 to record Aug. 21.

Motor Wheel Corp., Lansing, Mich., quarterly of 40 cents a common share, payable Sept. 8 to record Aug. 18.

FEDERAL CAPITAL STOCK TAX LAW CONTESTED

Suit to recover $400,594 in capital stock levies paid to the government by three United States Steel Corp. subsidiaries were reported on file last week in United States district court in Trenton, N. J. Companies, and amounts: American Steel & Wire Co., $314,290; American Bridge Co., $81,304; United States Steel Products Co., $5000. It also was reported that the suit attacks the constitutionality of the federal capital stock tax law.

Consumers' Earnings Statements

■ STEEL'S tabulation of reports from 142 companies among equipment manufacturers, suppliers and consumers shows an aggregate first half net income of $76,549,618. This represents an increase of 194.8 per cent over $25,963,585 net profit reported by the identical companies in the comparable period last year. Prior tabulations were presented in the following issues: July 24, p. 20; July 31, p. 18; and Aug. 7, p. 29. The subjoined table lists 23. Sixty-three of the 142 companies recorded a loss in the first half last year, while 26 reported a deficit this year. All figures are net income, except where asterisk denotes loss:

	Second quarter 1939	Second quarter 1938	First half 1939	First half 1938
Aero Supply Mfg. Co. Inc., Corry, Pa.	.....	.....	$48,233	$59,162
American Laundry & Machine Co., Cincinnati	.....	.....	122,507	152,806
Babcock & Wilcox Co., New York	123,930	1,027,786*	636,620*	1,758,350*
Bower Roller Bearing Co., Detroit	208,382	61,280	428,336	142,493
Electric Controller & Mfg. Co., Cleveland	.....	.....	11,270*	86,523
Fairchild Aviation Corp., Jamaica, L. I.	84,867	121,076	141,121	159,508
General Fireproofing Co. Youngstown	.....	.....	240,272	120,785
Hercules Motors Corp., Canton, O.	43,609	28,922	167,633	35,362
Hobart Mfg. Co., Troy, O.	.....	.....	532,528	322,004
Hudson Motor Car Co., Detroit	876,891*	1,229,051*	1,751,675*	2,759,532*
L. A. Young Spring & Wire Corp., Detroit	25,625*	158,532*	83,730	404,802*
Link-Belt Co., Chicago	243,318	148,262	442,479	382,352
McQuay-Norris Mfg. Co., St. Louis	.....	.....	234,615	89,194
Motor Wheel Corp., Lansing, Mich.	279,861	15,039*	700,266	84,455*
Murray Corp. of America, Detroit	151,720	209,421*	165,661	290,358*
Muskegon Motor Specialties Co., Muskegon, Mich.	.....	.....	111,137	52,672
White Sewing Machine Corp., Cleveland	40,258	13,083	153,275	55,047
Nash-Kelvinator Corp., Detroit	108,264	2,005,407*	248,769	4,191,092*
Pullman Inc., Chicago	335,846	216,349	1,104,127	644,901
Standard Steel Spring Co., Coraopolis, Pa.	.....	.....	215,584	36,655
Superheater Co., New York	82,201	264,231	264,173	338,683
Terre Haute Malleable & Mfg. Corp., Terre Haute, Ind.	.....	.....	15,790	46,545*
U. S. Universal Joints Co., Detroit	.....	.....	22,722	13,465

LABOR

COURT DELAYS VERDICT IN REPUBLIC-NLRB CASE

■ THIRD circuit court of appeals, Philadelphia, last week reserved decision on Republic Steel Corp.'s petition for dismissal of a national labor relations board order directing the company to rehire 5000 strikers involved in the 1937 blockade. Court also allowed corporation counsel until Aug. 16 to file a supplemental brief, if they wish.

Board's order was issued Oct. 18, 1938, and Republic soon therafter carried the case to the federal court.

Last week's argument on Republic's petition was marked by frequent clashes of opinion between opposing attorneys over what caused the strike. Republic counsel insisted "the record discloses the sole cause" was the company's refusal to sign a written contract. They pointed out that the board's order declared this refusal did not in itself constitute an unfair labor practice in the case.

The corporation's position that its refusal to sign a CIO agreement was the sole cause of the strike was elaborated in new evidence which the court permitted it to introduce. Corporation counsel held this evidence "was not admitted or considered by the national labor relations board in proceedings before it."

Attorney Frank E. Bow, representing the Independent Employes associations at Republic's Ohio plants, asked the court to review the section of the board's order requiring the groups to disband.

Republic has pending a suit under the antitrust act asking triple damages totaling $7,500,000 from the union as result of strike violence.

Long Conveyor Belts Booked for Chilean Mine

■ Robins Conveying Belt Co., New York, has closed a contract with Compania Carbonifera y de Fundicion Schwager, Coronel, Chile, for a system of underground and surface belt conveyors, to handle an ultimate capacity of 300 long tons per hour of 14-inch maximum, dry run-of-mine coal from undersea mine to preparation plant.

The system consists of eight 36-inch wide belt conveyors, approximating a distance of 2.25 miles. Several conveyors are exceptionally long. Nos. 1 and 2 from rotary car tippler to foot of inclined underground drift are 4300 feet and 970 feet long, respectively. A series of five belt conveyors then conveys the coal to the mouth of mine, a distance of about one mile. The surface conveyor from mine mouth to preparation plant is approximately 1550 feet long.

MEN OF INDUSTRY

■ KENNETH J. BURNS, until recently with Youngstown Sheet & Tube Co., Youngstown, O., has been appointed district sales manager at Cincinnati for Inland Steel Co., Chicago. Mr. Burns had been associated with Youngstown Sheet & Tube since 1917, serving as a salesman in its Cleveland office, manager of sales in the Cincinnati and Indianapolis offices. From 1929 to 1934 he was assistant manager of sheet and plate sales at Youngstown.

♦

Robert E. Black has been appointed to the Chicago sales staff of Lamson & Sessions Co., Cleveland.

♦

F. W. Boye III has been elected vice president, Boye & Emmes Machine Tool Co., Cincinnati.

♦

Louis M. Slack, Cleveland, has been appointed representative in northern Ohio for the Safety Grinding Wheel & Machine Co., Springfield, O.

♦

George W. Jernstedt, a chemical engineer in the meter division of Westinghouse Electric & Mfg. Co., Newark, N. J., has been awarded the Benjamin Garver Lamme graduate scholarship for the year 1939-1940.

♦

Raymond Willey, president, Harbison-Walker Refractories Co., Pittsburgh, has been elected a director, American Arch Co., New York, to succeed the late J. E. Lewis, formerly president of Harbison-Walker.

♦

Ivan Reitler, formerly president, Federated Metals division of American Smelting & Refining Co., New York, has been elected president, Metal Reduction Corp., North Bergen, N. J.

♦

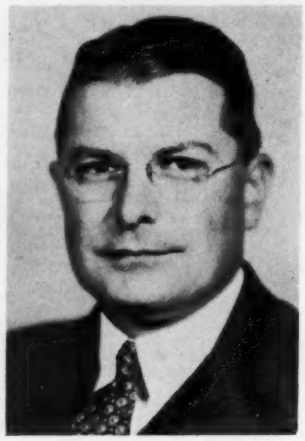
William D. Starr, formerly manager, Eastern Engineering Co., New Haven, Conn., has joined the research staff of Lea Mfg. Co., Waterbury, Conn., manufacturer of polishing and buffing compounds.

♦

L. M. Bang has been made district sales manager, central-western stoker division, Link-Belt Co., Chicago. Mr. Bang was formerly with Whiting Corp., Harvey, Ill., and had been identified with the stoker industry a number of years.

♦

Richard C. Poucher, formerly with Diamond Iron Works Inc., has joined the sales staff, Research Products Corp., Madison, Wis., in charge of sales engineering problems for the air filter division of the firm in New York, Pennsylvania, Ohio and Michigan.



Kenneth J. Burns

♦

E. A. Faulhaber has retired as executive vice president, Compressed Industrial Gases Inc., Chicago, after 25 years of service with the company and its predecessors. He will remain with the company as a director and in an advisory capacity.

♦

George Horton, president, Chicago Bridge & Iron Co., Chicago, sailed last week aboard the Yankee Clipper, for Marseille, France. He will return from Southampton, England, aboard the Dixie Clipper Aug. 17.

♦

James S. McCullough, the past 12 years with Lamson Co., Syracuse, N. Y., has become associated with Yale & Towne Mfg. Co., Philadelphia division, as advertising manager. Mr. McCullough is a graduate of Syracuse university.

A. C. Geldner

Who, as noted in STEEL, Aug. 7, page 32, has been promoted from assistant district sales manager at Los Angeles for Republic Steel Corp., Cleveland, to district sales manager

♦

Ira C. Keller has been elected president, Container Corp. of America, Chicago. A graduate of Rensselaer Polytechnic institute, Mr. Keller joined Westinghouse Electric & Mfg. Co. in 1920. Five years later he joined Sefton Mfg. Co., a forerunner of Container corporation, as assistant general superintendent. In addition to engineering, Mr. Keller became absorbed in sales work, eventually taking over both responsibilities in one of the corporation's carton manufacturing divisions.

♦

John M. Smith has been named vice president and general manager, Crosby Co., Buffalo, sheet metal stamping firm. Associated with the company since 1900, Mr. Smith heretofore was treasurer. He has been succeeded in that post by Fred C. Burkhardt, former secretary.

♦

E. T. Weir, chairman of the board, National Steel Corp., Pittsburgh, and president, American Iron and Steel institute, sailed last week for a brief vacation in Bermuda. Before departing he stated he could see no prospects for "anything approaching normal general business conditions this year."

♦

Paul S. Menough, formerly with Duraloy Co., Michigan Steel Casting Co., and Michiana Products Co., has been named chief engineer, Standard Alloy Co., Cleveland. Frank P. Morrow, the past six years district manager at Detroit for Standard Alloy, has been appointed sales manager, effective Sept. 1, with headquarters in Cleveland.

♦

Earl B. Cutter, for 34 years a salesman in the Middle West for Norton Co., Worcester, Mass., has retired. He joined the company's Chicago office in November, 1905, and for many years has had his headquarters in Davenport, Iowa. Earl C. Willey, heretofore in the Chicago office, has been transferred to Davenport, to succeed Mr. Cutter.

♦

C. Reese has been elected president, Continental Motors Corp., New York, succeeding W. R. Angell, who has resigned as president, treasurer, and director. Mr. Reese joined the company in 1932 and in 1935 was made vice president and general manager. Mr. Angell will become technical advisor of Continental.

♦

Frank R. Pierce has resigned as manager, household sales division, Frigidaire division of General Mo-

tors Corp., Dayton, O., to become general sales manager, Kelvinator division of Nash-Kelvinator Corp., Detroit. He succeeds Henry W. Burritt, who has resigned to become president, Eureka Vacuum Cleaner Co., Detroit.

♦

Manley E. Lord, since 1935 co-ordinator of all refrigerator manufacture for General Electric Co., Schenectady, N. Y., has been named assistant to W. R. Burrows, vice president in charge of manufacturing. Mr. Lord's new duties will be in the field of cost reduction and his operations will extend throughout all manufacturing departments of the company. Joseph F. Eckel, has been named to succeed Mr. Lord, with whom he has been associated since 1935.

♦

John A. Bauer, for several years in charge of the New York office of Hanson-Van Winkle-Munning Co., Matawan, N. J., manufacturer of electroplating equipment and supplies, has been transferred to Matawan to assist L. M. Hague, vice president in charge of sales. Irving A. Gemmell, in the engineer department at Matawan, has been transferred to New York. Charles L. Anger has joined the sales staff in Detroit.

♦

Thomas B. Kelday and George H. W. Stone have been re-elected president, and vice president, respectively, Endicott Forging & Mfg. Co. Inc., Endicott, N. Y. D. O. Freeman Jr. has been elected treasurer, and A. W. Schaefer, secretary. The following directors have been re-elected: Messrs. Kelday, Stone, Freeman, Arthur L. Kent and H. F. Meyer. Mr. Schaefer was elected a director.

♦

Charles A. Dostal has been appointed manager of sales, Pacific coast district, Westinghouse Electric & Mfg. Co. During his 33 years' affiliation with Westinghouse, broken twice by association with other electrical firms, Mr. Dostal has been a sales executive in the Philadelphia, St. Louis and Chicago offices. His appointment will relieve William R. Marshall, vice president, who has been in charge of the district since 1928, of managerial duties so that he may devote his full time to the company's sales interests in that district.

♦

W. J. Adams, J. E. White, Duke Kerrick and Gil Koehler, all formerly identified with the tractor equipment division of Continental Roll & Steel Foundry Co., East Chicago, Ind., have become associated with Gar Wood Industries Inc., road machinery division, Detroit. Gar Wood recently acquired the tractor equipment division of Continental. Mr. Adams has been added to the engineering staff, Mr. Kerrick and Mr. Koehler have been made field representatives, and Mr. White, sales engineer, road machinery division.

F. A. Wright
Who has been appointed manager of resale sales, Cutler Hammer Inc., Milwaukee, as noted in STEEL, Aug. 7, page 32

♦

L. A. McCleish and Ward W. Swarthout are now associated with G. W. Van Syoc, General Motors building, Detroit, furnishing engineering, development and sales service for the following companies: Motors Metal Mfg. Co., Detroit; Powell Pressed Steel Co., Youngstown, O.; Youngstown Steel Car Corp.; Cleveland Metal Stamping Co.; Formed Tubes Inc., Sturgis, Mich.; Ranney Refrigerator Co., Greenville, Mich.; Tower Iron Works, Greenville, Mich., and Practical Die & Specialty Mfg. Co., Chicago.

Mr. McCleish for seven years was active in a supervisory capacity in the stamping and sheet metal division of Murray Corp. of America, Detroit; for seven years with stamping and body divisions of the Auburn Automobile Co., Auburn, Ind., and three years with sheet metal division of Yellow Truck & Coach division of General Motors Corp. Mr. Swarthout is former factory manager, Universal Cooler Corp., Detroit.

DIED:

■ JACOB D. WADDELL, 69, long prominent in Youngstown, O., district steel and civic circles, in Niles, O., Aug. 4. He had been serving as president, Niles Bank Co., and secretary-treasurer, Niles Trust Co. Early in his career he became associated with James A. Campbell, one of the founders of Youngstown Sheet & Tube Co.

He went with Mr. Campbell to the Warren rolling mill, three years later joining Warner and Myron I. Arms in the former Falcon Iron & Nail Co. at Niles. Two years later he again joined Mr. Campbell with the Mahoning Valley Iron Co., and after five years entered the employ of American Sheet Steel Co. in New York, where he remained four years. In 1906 Mr. Waddell returned to Niles where he was elected secretary-treasurer, Empire Iron & Steel Co., and when Empire was purchased by Brier Hill Steel Co. in 1912, he became general manager of sales for the latter.

In 1916 he formed Mahoning Valley Steel Co., serving as president and treasurer until May, 1923. The following year Mr. Waddell and associates purchased the Empire works from Youngstown Sheet & Tube Co., organizing Waddell Steel Co. He continued as president and treasurer until 1928 when the plant was taken into the newly formed Empire Steel Co., of which he was vice president and secretary-treasurer until his retirement in 1931.

♦

Carl F. Koch, 63, proprietor, American Sheet Metal & Iron Works, Milwaukee, July 26 in that city.

♦

Glen T. Purdy, 48, the past 16 years purchasing agent, Midland Steel Products Co., Detroit, in that city, July 25.

♦

Donald Gay, assistant purchasing agent, Newport News Shipbuilding & Dry Dock Co., Newport News, Va., Aug. 6.

♦

William C. Whitcomb, 71, who for many years was president, Whitcomb Locomotive Mfg. Co., Rochelle, Ill., until his retirement in 1931, Aug. 6 at Eagle River, Wis.

♦

Robert G. Richmond, 68, who retired in 1929 as general manager, Waterbury Co., New York, cable manufacturer, in Summit, N. Y., Aug. 4.

♦

James T. Patterson, 58, president and treasurer, Cornwall & Patterson Corp., Bridgeport, Conn., hardware manufacturer, Aug. 6 in Milford, Conn.

♦

Edward Durkin, 54, superintendent, open-hearth furnace department, Longue Pointe works of Canadian Car & Foundry Co. Ltd., Montreal, in that city recently.

♦

David A. Hossler, 69, a pioneer of the sheet metal industry, at his home in Cleveland, Aug. 2. Mr. Hossler was widely known in the trade in northern Ohio through his 41 years' association with the J. M. & L. A. Osborn Co., Cleveland.

FAST UNIFORM HEATING with AJAX-NORTHRUP FURNACES

» At the Frankford Arsenal, Ajax-Northrup Induction Furnaces provide a rapid, uniform method of heating steel bars for forging into 3 inch shells.

High-frequency heating, as developed by Ajax engineers, is the newest method of heat-treating for forging, brazing, upsetting, continuous strip tempering — any application where metal is heated below the melting point. As an example of the possibilities of the Ajax-Northrup method, 2½" shafts can be heated to 2200° in ninety seconds!

In your own plant, Ajax-Northrup Furnaces can bring improvements in quality, quantity and costs of production. Write us, outlining your problems, and learn more of this interesting new method of improving heat-treating results, obtaining better control and earning greater savings.

AJAX-NORTHRUP MELTING FURNACE
CAPACITIES: ONE OUNCE TO EIGHT TONS

Ajax-Northrup Induction Furnace Heating Steel Bars for 3 Inch Shells

This Ajax-Northrup Furnace in the Artillery Division of Frankford Arsenal is used to heat bars of steel ready for producing two 3 inch shells from each bar. In the left-hand furnace is a bar that has been heated for forging, while in the foreground is a bar that has already been shaped on one end.

ASSOCIATE COMPANIES

The Ajax Metal Co.
Non-ferrous Ingot Metal for foundry use.

Ajax Electric Furnace Corporation
Ajax-Wyatt Induction Furnaces for melting.

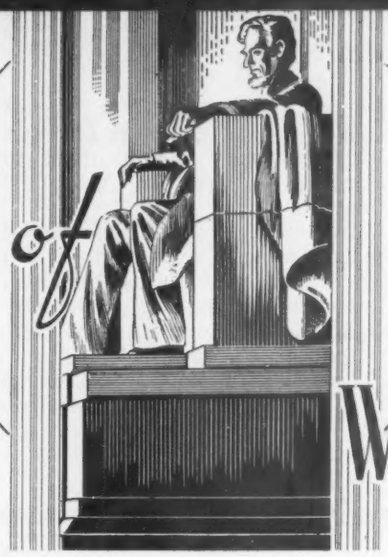
Ajax Electric Co., Inc.
Ajax-Hultgren Salt Bath Furnace and Resistance Type Electric Furnaces for all heat treating operations.

AJAX

AJAX ELECTROTHERMIC CORPORATION

AJAX PARK, TRENTON, N. J.

Windows of WASHINGTON



By L. M. LAMM
Washington Editor, STEEL

WASHINGTON

■ CONGRESS' adjournment has brought the capital into its usual late summer lull. Members have hurried home to mend political fences and to hear at first hand the home folks' reaction to the congressional revolt against the administration.

What they hear from constituents will go far in determining their attitude in the next session. If the home folks confirm the popular weariness with New Deal "magic" indicated in recent national polls, an even more positive conservative swing will be noted next January.

Business, appraising the session just ended, can count many gains: Defeat of the spending-lending and housing bills; passage of the Hatch bill; elimination of the prevailing wage and other changes in the WPA; social security act revision; some tax relief; defeat of the Townsend bill and shelving of other measures tagged "must" by the New Dealers.

On the loss side is the new peacetime total of appropriations, a staggering $13,000,000,000, nearly $2,000,000,000 more than in 1938. This record, accompanying the anti-New Deal rebellion, again demonstrates the tremendous difficulty in curbing government spending.

Blame for this prodigality falls largely on congress which exceeded the President's budget request by more than a quarter billion dollars, and while often talking economy practiced it in reverse.

STETTINIUS HEADS NEW WAR RESOURCES BOARD

Edward R. Stettinius Jr., chairman, United States Steel Corp., will be chairman of the war resources board set up last week by the army and navy to speed up national mobilization in case of war. Other members: Karl T. Compton, president, Massachusetts Institute of Technology; Walter S. Gifford, president, American Telephone & Telegraph Co.; Harold G. Moulton, president, Brookings institution; John Lee Pratt, a director, General Motors Corp.; Gen. Robert E. Wood, chairman, Sears, Roebuck & Co.

In a national emergency the board automatically would become an executive agency similar to the powerful war industries board of the World war. Its peace-time function will be to advise the army and navy munitions board on "mobilization of the economic resources of the country."

Board also will help perfect the army's plans to avoid the confusion which followed America's entry into the World war. Under these plans some 10,000 manufacturing plants already have been assigned wartime tasks.

NINE CONGRESSIONAL INQUIRIES SCHEDULED

Groundwork is being laid for nine congressional investigations for which $845,000 has been appropriated. About two score congressmen will return to Washington this summer and fall to probe the national labor relations board, general economic condition, taxation and the works progress administration.

Just before adjournment, Speaker Bankhead appointed three Democrats and two Republicans to investigate the labor board. Howard W. Smith, Virginia, anti-New Deal Democrat, author of the house resolution authorizing the probe, will be chairman. Other members: Democrats Arthur D. Healey, Massachusetts, and Abe Murdock, Utah; Republicans Charles A. Halleck, Indiana, and Harry N. Routzohn, Ohio. Three are conservatives; two are New Dealers and friendly to labor.

Chairman Smith announced the committee members would return to Washington Sept. 7 to prepare for the probe although hearings probably will not start until October. Most of the hearings will be held in Washington, he indicated.

Meanwhile government experts are preparing to continue the temporary national economic committee's investigation. Committee will return in October and hold hearings on the oil and steel industries (STEEL, Aug. 7, p. 34).

Wisconsin's Senator LaFollette will take his civil liberties committee to San Francisco in September to investigate California's Associated Farmers. Representative Dies, Texas, will continue the inquiry into unAmerican activities while a house committee will go forward with the WPA probe. The house ways and means subcommittee will study the tax situation.

SOCIAL SECURITY ACT REVISION WELCOMED

Widely welcomed was congress' action in revising the social security act in line with the recommendations by the President's advisory committee. New measure liberalizes benefits to the aged in an attempt to head off "wild-eyed" pension schemes and freezes the payroll tax for old age insurance at 1 per cent for the next three years, instead of permitting it to go to 1½ per cent next year. This is expected to result in a saving of $825,000,000 in the next three years. Additional savings to employers will result in elimination of unemployment insurance tax on that part of an employe's income above $3000.

TAXES CLIMB FASTER IN U. S. THAN UNITED KINGDOM

Taxes in the United Kingdom rose 430 per cent since 1913. During the same period, United States taxes climbed 640 per cent, or 210 per cent more, according to an analysis by the National Association of Manufacturers. This represents a rate of tax growth in the United States one-and-one-half times as great as in the United Kingdom.

From 1913 to 1924 both countries had increased the tax load in almost exactly the same ratio. For the United States, the analysis included all taxes imposed by the federal, state and local governments. For the United Kingdom, the taxes com-

piled were those levied by the national government and by localities in England, Scotland, Wales and Northern Ireland.

By 1929, the rate of the growth of the tax burden in this country had gone considerably ahead of that of the other nation. And 26 years after the pre-war year of 1913, taxes in this country had climbed almost 6½ times compared to a 4 1/3 rise in the United Kingdom.

"In recent years, the British budget has been faced with a tremendous expansion of armament expenditures, which has been met in large degree by increased income and estate levies and by imposts on various commodities," the association emphasized. "English expenditures for defense service has increased six-fold during the past seven years. Recovery and relief expenditures in this country have been largely responsible for heavy government borrowing and growing demands on the American taxpayer.

"It is important to point out in any fair comparison of the tax burden of the two countries that while the United Kingdom has operated on a substantially balanced budget with government revenues practically equal to government outlay, this nation has operated on a completely different policy. The national debt of England will rise slightly more than $4,680,000,000 (at current rates of exchange) in the decade ending in the calendar year 1939, while our federal debt will rise some $27,000,000,000 during the same period."

STRATEGIC MATERIALS PURCHASES PLANNED

War department plans for buying approximately $10,000,000 of strategic raw materials during the present fiscal year will be completed within the next two weeks. Major commodities to be purchased will be manganese, rubber and tin, while smaller stocks of tungsten and chromium will be acquired.

War department officials drew up plans some time ago for the acquisition of stockpiles of raw materials not produced in the United States in sufficient volume for war time needs. The program, however, requires approval of other departments of the government, and it is this phase of the plan which now is receiving finishing touches.

PROPOSE STANDARDS FOR CAST IRON ENAMELED WARE

A commercial standard for cast iron enameled ware designed to improve its general serviceability, quality and acceptance has been announced by the national bureau of standards.

Standard was proposed by the Sanitary Cast Iron Enameled Ware association and embodies some changes suggested by the 35 interested national organizations to whom it has been submitted for comment.

Minimum physical performance requirements for sanitary cast iron enameled ware, such as bathtubs, lavatories, kitchen sinks, laundry trays, drinking fountains and similar fixtures, are provided.

These requirements pertain to material, thickness warpage, enameling, acid resistance and other factors concerning the serviceability of such products.

FINDS CONSERVATIVE TREND IN CONGRESS ENCOURAGING

American business should gather "encouragement and confidence" from conservative trends in congress, but it cannot be held responsible for recovery without "further positive action" by the legislators, according to Howard Coonley, president, National Association of Manufacturers.

"The effect of ten years' experimentation with our economic machinery cannot be overcome even with the best of intentions and the most determined efforts of business management until those experiments are abandoned or adjusted to experience," Mr. Coonley said in a letter which went to the association's 7600 members.

"Considerable over-emphasis is placed on the claim congress 'has accepted industry's challenge' and that responsibility for complete recovery has now been shifted to business. It is true congress has slowed down some of the unsound trends which have penetrated our national thinking. This was apparent not only in what they refused to do, but also in the start made toward the correction of existing defects. Final action on most of these corrections was postponed until the next session. The results, therefore, were principally psychological. Substantial and sound recovery depends upon further positive action by congress.

"Surely, nearly ten years of continuous depression should make it crystal-clear to politicians and public alike, that recovery awaits the correction of things done wrong."

He declared, however, business should have nothing "but the greatest commendation" for the encouragement which congress did afford and stressed that his letter was meant in no sense to diminish the "credit" deserved by the national legislators.

Means by which congress could pave the way to business recovery, said Mr. Coonley, include amendment of the national labor relations act.

Mr. Coonley voiced confidence for the future:

"I am convinced business will derive encouragement and confidence from existing congressional trends. Many obstacles to recovery still remain, it is true, but I know from past experience and intimate contact with members of the association that industry will make every effort to move forward despite them.

"I know it is not necessary to urge that all members of the N.A.M. examine carefully their present and near-future production demands in order to determine whether there is any possibility of providing employment for more people.

"Such action is timely because of the belief expressed currently in several quarters that there will be considerable increase in industrial production during the balance of the year, and also because industry must do its utmost, within the limitations of permissible volume of production, to translate relief rolls into payrolls."

In conclusion, he warned against selfishness in seeking government spending:

"Business men also should practice what they preach on the subject of government spending. Congress needs to be sustained in fact as well as in theory on this question of governmental extravagance. So when we ask for government thrift at the front door, let's not be guilty of petitioning congress at the back door for expenditures in our state, our city, our district. Government economy, like tax raising, begins with less demands by the individual for government spending."

GOVERNMENT STEEL, IRON AWARDS TOTAL $645,733

For the week ended July 29, the government purchased $645,733.24 worth of iron and steel products under the Walsh-Healey act as follows: Philadelphia Gear Works, Philadelphia, $38,000; National Tube Co., Pittsburgh, $105,139.60; Clemson Bros. Inc., Washington, $22,867.93; William Scrimgeour, Washington, $44,037.28; Firecraft Door Co., Chicago, $17,775; Thompson Mfg. Co., Denver, $11,795; Thompson Mfg. Co., Denver, $30,228.50; Timken Roller Bearing Co., Steel & Tube division, Canton, O., $28,928.45; Republic Steel Corp., Massillon, O., $27,072.50; Carpenter Steel Co., Reading, Pa., $10,800 (estimated); Nashville Bridge Co., Nashville, Tenn., $13,190; Blaw Knox Co., Pittsburgh, $158,095.98 (estimated); Anaconda Wire & Cable Co., New York, $13,510.85; Sheffield Steel Corp., Kansas City, Mo., $24,399.55 (estimated); Soule Steel Co., San Francisco, $62,925.85; Butler Mfg. Co., Kansas City, Mo., $36,966.75.

What's New at Pittsburgh . . .

By R. L. HARTFORD
Pittsburgh Editor, STEEL

■ BLAST FURNACE operations here have increased to the highest point since 1937. Twenty-six of the 50 stacks in the district now are active, compared with 42 in the fall of 1937. Recent resumption of two stacks by Jones & Laughlin Steel Corp. at its Pittsburgh works brings the total there up to four, and to eight for the company. Carnegie-Illinois Steel Corp. has just announced a fourth active stack at Edgar Thomson works, bringing the company's total to 12 in this immediate district.

Employers' association here reports that employment figures for 63 representative firms, mainly metalworking, show an increase for the second quarter.

Average number on payrolls moved up to 35,048 from 34,685 in the first quarter. Average hours worked per week rose from 37.8 to 39.4. Average monthly man-hours worked increased by 371,411 to 5,481,700 in the second quarter.

♦ ♦ ♦

Irvin Works Toured by 20,000

Since the opening of Irvin works Dec. 15, Carnegie-Illinois has recognized public interest in the "mill on the hill" with open-house tours each Tuesday and Thursday afternoon. More than 20,000 visitors have availed themselves of this opportunity to see the plant in operation. Significant, since the mill is off the beaten path and about 20 miles from Pittsburgh.

♦ ♦ ♦

Value of Plant Paper

Example of how much good a plant paper can do was brought forcibly home recently when we were in Weirton, preparing material for an article on the new structural mill there. Photographs for the article were taken by a photographer from the *Weirton Employees Bulletin*, under our direction.

Going through the plant it seemed as if every man knew the photographer and realized pictures were being taken for publication. Signs of goodwill and interest in our activities were evident.

The *Bulletin*, a monthly, is the principal medium used in fostering support of town and plant activities, of which there are legion. Each issue carries dozens of photographs of mill people, and records social and personal activities.

The safety department makes good use of the paper. An annual feature is a financial report to employes, with figures pointed over a picture of a huge ladle, portioned off into various avenues where money is spent.

One angle of the story on Weirton's new structural mill was the hiring of many men for the construction work, in addition to those who will be required when the mill operates. It is just another step which shows the industry has by no means reached its peak employment—that it will continue to support more employes in spite of increasing mechanization.

♦ ♦ ♦

Since alloy steels play an important part in construction of aviation engines, Allegheny Ludlum Steel Corp. is attempting to further aviation developments by posting $2000 for the flyer who can establish a new speed record in the annual Thompson trophy race, highlight of the national air races. According to Hiland G. Batcheller, president, further use of alloy steels will contribute to the advance of aviation, and the company hopes to foster greater developments.

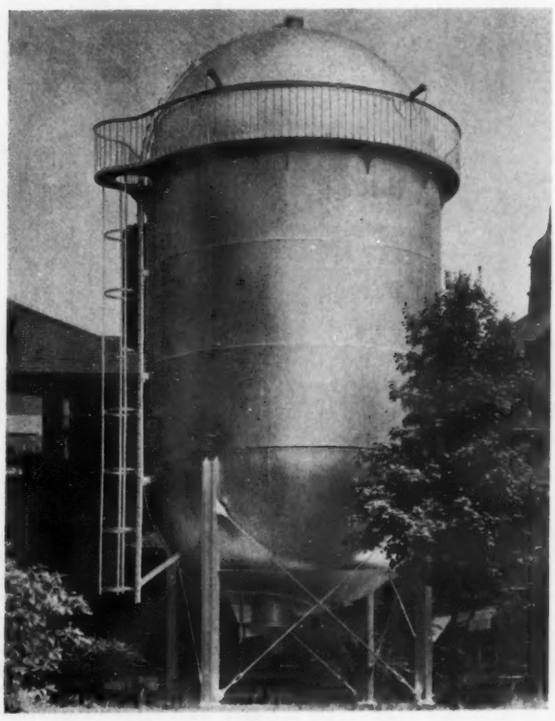
Cuban Experience May Solve Manganese Problem

■ As a result of improved methods and equipment, Cuban-American Manganese Corp., subsidiary of Freeport Sulphur Co., has been able to cut its operating costs materially, according to F. S. Norcross Jr., president and general manager, Cuban Mining Co., in an article in *Mining and Metallurgy* for August.

Under the present tariff, a 50 per cent manganese sinter can be produced from low-grade ores (13 to 18 per cent) competitively with high-grade ores from other countries that do not require involved concentrating methods. Cuban ores are duty-free in the United States.

Cuban-American is operating in a field of approximately 7000 acres of mineral land near Santiago, and is producing manganese concentrate at the rate of approximately 10,000 long tons per month. In 1938 it shipped 131,422 tons of this concentrate to the United States, thus elevating the importance of Cuba as a source of our manganese ore. This was equivalent to more than 27 per cent of our manganese imports during that year, as compared to a negligible percentage in years past.

Mr. Norcross sees the Cuban development as of special significance. Cuba is a source that could not easily be cut off in time of war, and the Cuban ore is similar in grade to that found in large and widely scattered deposits in the United States. Hence the beneficiation methods successfully applied in Cuba provide the approach for successful concentration of domestic ores.



Steel Houses Atom Smasher

■ Steel atom smasher shell fabricated by Chicago Bridge & Iron Co., Chicago, for the University of Pennsylvania, Philadelphia, is of welded construction, 20 feet in diameter, designed for pressure of 100 pounds per square inch. Vessels of this type are used to house apparatus for breaking down the atom as pressure helps to insulate the instruments and prevent them from losing electrical charges

■ Employers' contributions under the Wisconsin unemployment compensation law constitute a tax and claims for them are entitled to priority over claims of general creditors, ruled Federal Judge F. Ryan Duffy last week in a case involving a bankrupt firm.

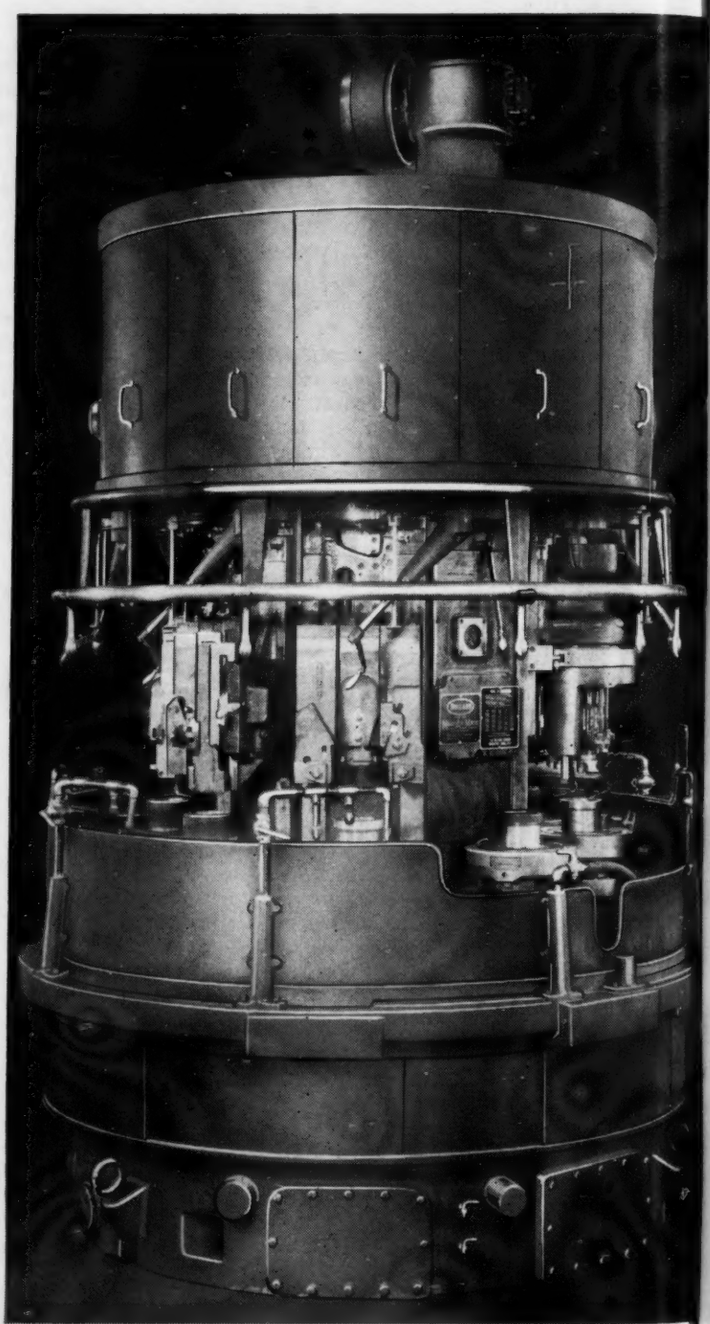
TYPICAL MULT-AU-MATIC *Experience*

Two chuckings and a rough piece of metal become a finished wheel hub *in time that seems unbelievable.*

Before

and

After



Look at the photos above. Right—the rough forging at the end of the first chucking. Left—the finished job; turned, faced, bored, reamed, 5 holes drilled in the flange, 8 in the hub—all done in the time needed for the longest single operation, plus a few seconds for indexing.

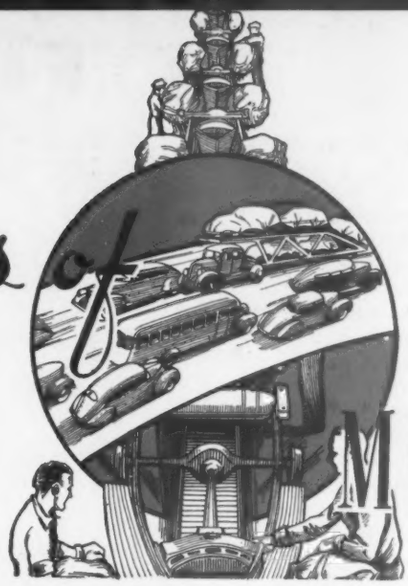
Machining operations of this sort are possible when the Bullard Mult-Au-Matic Method is utilized—individual speeds, individual feeds, simultaneous operation.

Is your file of information on Bullard Mult-Au-Matics up to date?

THE BULLARD COMPANY
BRIDGEPORT, CONNECTICUT

BULLARD

Mirrors of MOTORDOM



By A. H. ALLEN
Detroit Editor, STEEL

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DETROIT

■ WHAT was reported the largest driveaway of new cars in the history of the automobile industry streamed out of this city last week as 4500 Packard distributors and dealers steered 4100 of the 1940 Packard models homeward. All of Packard's production for the past four weeks has been stored in garages in the downtown area awaiting arrival of sales forces for the driveaway. Tuesday they congregated at the Packard proving grounds at Utica, Mich., to inspect the new models and learn the fine points about engineering changes and how they affect servicing. Wednesday the exodus started.

Four series of cars constitute the Packard line for 1940—the One-Ten, the One-Twenty, the One-Sixty and the One-Eighty. The first is a 6-cylinder, the other three 8-cylinder models. Engine for the One-Sixty is entirely new and is used also in the One-Eighty, the latter being a deluxe or custom version of the former and supplanting the discontinued 12-cylinder models.

With the exception of radiator shells and grilles the cars are not strikingly different from the 1939 models, but many improvements have been effected in chassis and mechanical details. Rear springs are mounted in a "compression shackle" or flat spring steel gooseneck bolted to the frame, which slows down the rate of the spring to improve riding qualities. Reduction in road noise also is claimed. Front suspension system has been strengthened and additional lubrication points added.

Headlamps are of the "sealed beam" type supplied by Hall and General Electric. Outwardly these lights look exactly like former types, the difference being that the lighting element is hermetically sealed with the reflector and condensing lens which concentrates all light where it is wanted on the road and eliminates glare.

A greatly improved type of overdrive has been developed for optional inclusion on transmissions. Foam rubber or latex pad introduced by Hudson last year on seat cushions is being used by Packard on seat cushions for the two larger series of cars. Die cast combination door catches and spring bumpers are conspicuous on all models. A number of other innovations will be revealed in specifications yet to be released. Lower prices will apply on all lines.

■ THREE lines of cars will comprise Hudson line for 1940, shown to newspaper men Wednesday and now rolling from assembly lines. They are a deluxe six on 113-inch wheelbase; a super-six and an eight on 118-inch wheelbase and identical except for the engine; and the Country Club series of sixes and eights on 125-inch wheelbase. Hood designs are new and are one piece down the sides and including the catwalks, being hinged low at the front so the entire unit can be swung up permitting easy accessibility to the engine.

New this year for Hudson is a wishbone-type independent suspension system for front wheels, comprising upper arms of forged steel, lower arms of heavy, stamped channel-section steel, coil springs of silicomanganese steel and low-pressure hydraulic shock absorbers axially mounted inside the coil springs. Used in conjunction with the new suspension is Hudson's autopoise control, comprising spring steel

Hudson Uses Wishbone-Type Coil Spring Suspension

■ **Coil spring suspension of the wishbone type, used in conjunction with center-point steering and autopoise control for holding front wheels on their course, is a feature of the 1940 Hudson models, shown for the first time in Detroit last week**

leverage device with the ends angled back to form shock cushioned mechanical arms connected directly to the wheels.

Coil springs applied to front suspensions meant a reduced spring rate in front; hence rear springs were lengthened 8 inches to 60 inches to lower rear spring rate.

Sealed-beam headlights are standard equipment on all Hudson models. Vision rearward has been aided by expanding the size of the rear window and using curved safety glass in it.

Radiator grilles are of the low type, comprising two sets of horizontal die cast bars, chrome plated. Interiors on some models introduce a new two-tone upholstery fabric for seat cushions, backs and doors.

Continuous babbitting process for connecting rods, introduced late in the 1939 model year, is continued. The rod is protected between operations to avoid oxidizing before babbitting. Bonding of bearing metal to the forged steel rod is improved, extending engine life. Silver plating of all exposed electrical terminal connections is another innovation in 1940 models calculated to give more trouble-free service.

■ POLYVINYL acetal resin is the imposing name given to a new type of plastic which Libbey-Owens-Ford at Toledo, O., is using in its high-test safety plate glass which, incidentally, will be standard in side windows of all Fisher bodies for 1940. A demonstration was arranged in Toledo last Monday at which advantages of the new glass were detailed and laboratory tests made to substantiate claims.

This new safety glass has appreciably greater strength than safety plate glass laminated or sandwiched with the former cellulose acetate plastic, particularly at low temperatures when the cellulose material becomes brittle. As mentioned in STEEL for April 10, the glass was developed by chemists and engineers of five co-operating companies after a six-year $6,000,000 research program.

The resin is a rubbery material supplied in rolls of sheeting about a yard wide to the laminating operation. The sheets are opaque and must be washed, dried, die cut, placed between the two ⅛-inch sheets of plate glass, treated in pre-pressing operation, then placed in autoclaves under temperature and pressure. The plastic becomes perfectly transparent and bonds the two layers of glass together with such firmness that the glass later may virtually be pounded to pieces and rolled up like a rug without any of the glass particles leaving the plastic sandwich filler.

The first patent on laminated glass was granted to an Englishman named John Wood in 1906, but did not make its appearance on automobiles until 1928. Original plastic used for lamination was cellulose nitrate which proved unsatisfactory because of discoloring. Cellulose acetate was introduced in 1933 and proved more satisfactory, but the new vinyl resin seems to have carried the process a step further at little, if any, extra cost to producers of safety glass.

Some interesting tests were described at the Toledo affair which showed the effect of distortion in glass upon eye strain, fatigue and other "human" or social factors. Originally, safety glass was laminated of sheet or window glass, but to get around distortion, plate glass was adopted. Plate glass, of course, is considerably more costly than window glass since it must be thoroughly ground and polished on both sides to correct any tendency toward distortion. Heavy and complicated equipment, mostly of Belgian design and manufacture, is used to do this grinding and polishing at the L-O-F plant in Toledo. Operations in this plant are highly interesting to anyone not familiar with glass manufacture.

For years, one of the most ticklish problems in this industry has been how to handle large sheets and plates of glass without dropping them or injuring nearby workmen. The development of the vacuum-cup rack about ten years ago proved a boon and is now used in virtually all handling operations where large plates must be moved from place to place.

This rack comprises a steel frame to which are attached ten or 12 rubber pads or disks, the latter being connected through hose to a vacuum pump. The rack is carried by overhead crane and the cups placed in contact with the glass. The exhaust lines are opened and the cups adhere firmly to the glass, permitting it to be lifted and moved anywhere. Only rarely has a large sheet ever shaken loose from this handling rack, according to L-O-F engineers.

■ ATTEMPT to break the existing speed record for automobiles of 357 miles per hour will be made this month on the Bonneville salt flats in Utah, a specially designed speedster now being on its way from England to be driven by John Cobb. Designer is Reid Railton, who has supplied STEEL some information on design and construction of the new car. Powered by two 1250-horsepower supercharged Napier Lion engines, the car has an aluminum alloy streamlined body completely enclosing wheels and mechanism, mounted so that it can be detached and lifted from the chassis in a few seconds. Weight of the car and body is 6000 pounds.

A single steel beam in the center forms the frame, engines being slung one on either side of this beam. Each engine, with its transmission is independent of the other, one driving through a three-speed gearbox and a short propeller shaft the bevels for the front axle which are in a housing bolted to the frame; the other engine driving through another three-speed gearbox and another propeller shaft the gears of the rear axle. Front wheels are independently sprung, rear wheels are sprung with the axle. In both cases the suspension system is a steel coil spring backed by a series of rubber disks which take up impact when the coil is compressed solid.

Front tread is 5 feet 6 inches, rear is 3 feet 6 inches. Tire diameter is 44 inches. Driver sits in front of the front axle, with a control arranged so that one lever changes both gearboxes simultaneously. The engine throttles are interconnected. Brake pedal operates hydraulically two contracting band brakes on the gearboxes. Each brake drum is cooled by water bled from the engine cooling system. To avoid a radiator, the cooling system for the engines comprises a 75-gallon water tank in

(*Please turn to Page* 74)

Automobile Production

Passenger Cars and Trucks—United States and Canada

By Department of Commerce

	1937	1938	1939
Jan.	399,186	227,130	353,946
Feb.	383,900	202,589	312,141
March	519,022	238,598	389,489
April	553,231	238,133	354,263
May	540,377	210,183	313,214
June	521,153	189,399	324,235
July	456,909	150,444	*198,000
7 mos.	3,373,778	1,456,501	2,245,288
Aug.	405,072	96,936	.....
Sept.	175,630	89,623	.....
Oct.	337,979	215,296	.....
Nov.	376,629	390,350	.....
Dec.	347,349	407,016	.....
Year	5,016,437	2,655,777	.....

*Estimated.

Estimated by *Ward's Reports*

Week ended:	1939	1938†
July 15	61,610	42,010
July 22	47,420	32,070
July 29	40,595	30,390
Aug. 5	28,250	14,771
Aug 12	24,875	13,790

†Comparable week.

	Week Ended Aug. 12	Aug. 5
General Motors	1,030	3,530
Chrysler	2,140	2,130
Ford	17,000	17,500
All others	4,705	5,090

☆

How to make a "Watch Bearing" for 1000 whirling tons

☆

Problem: How to finish one of the world's largest cast-iron thrust bearings, 105 inches in diameter, to make it support the whirling bulk of a 2,000,000 pound turbo-generator impeller and rotor with a minimum of friction, vibration and wear?

Answer: Carborundum Sales Engineers, in collaboration with the manufacturer of this generator, specified the correct procedure. First, tool marks were removed from the casting with a definitely graded Carborundum Brand Silicon Carbide surface-grinding wheel. Then the bearing surface was smoothed and polished with successively smaller sizes of standard Carborundum Brand Abrasive Grain, using wood and lead laps. The result was a highly polished, perfectly uniform surface that today is helping make one of the world's largest hydro-electric generators run like a watch.

This is one more example of the effective manner in which Carborundum Engineering Service and Carborundum Brand Products combine to solve both the usual and unusual grinding problems in every industry.

AN INVITATION TO EXECUTIVES CONCERNED WITH MANUFACTURING

Whatever you make, there are two ways in which The Carborundum Company's Abrasive Service can help your company. Highly trained abrasive engineers are ready to help solve any special grinding or finishing problem that may confront you. Also, without obligation, they will study your present abrasive set-up, report on its efficiency, and wherever possible, indicate how production can be improved or savings effected. Write to The Carborundum Company, Niagara Falls, N. Y. and a representative will call.

SEE THE CARBORUNDUM EXHIBIT, BOOTH 2228, MACHINE TOOL SHOW, CLEVELAND, OCTOBER 4-13, 1939

CARBORUNDUM
REG. U.S. BRAND PAT. OFF.
ABRASIVE PRODUCTS

FOR ACCURACY AND ECONOMY IN MANUFACTURE

Finished Steel In First Half

■ FINISHED steel made for sale in the first six months this year totaled 12,958,629 gross tons, according to the American Iron and Steel institute. Finishing capacity was engaged at 53.4 per cent of capacity; 53.6 per cent in the first quarter, and 52.9 per cent in the second, when 6,416,520 tons was produced.

Output in the first half of 1938 was 8,064,934 tons, at 33.5 per cent of capacity; and in first half, 1937, 19,997,155 tons, at 84.4 per cent.

Only small variation is shown in tonnages of leading products between first and second quarters this year. Plates increased from 400,718 tons in first quarter to 504,795 tons in second quarter; structural shapes 458,920 tons to 474,293 tons; steel piling 28,423 to 33,330 tons; hot-rolled tin plate 122,195 to 122,544 tons; cold-reduced tin plate 299,704 to 433,364 tons; drawn wire 254,289 to 261,269 tons.

Steel sheets declined from 1,653,867 tons to 1,492,090 tons; steel bars from 1,172,860 to 1,115,840 tons; hot-rolled strip 242,728 to 210,287 tons; cold-rolled strip 124,862 to 109,693 tons.

Tonnages supplied for conversion into further finished products totaled, 1,315,359 tons, of which 623,368 tons were shipped in second quarter. In first half, 1938, steel supplied for conversion totaled 682,869 tons, and in the same period in 1937, 2,348,665 tons.

Exports in first half were 777,768 tons, compared with 799,137 in the 1938 period.

AMERICAN IRON AND STEEL INSTITUTE
Capacity and Production for Sale of Iron and Steel Products

Second Quarter - 1939 (period)

		Number of companies	Items	Annual Capacity Gross tons	Production for Sale—Gross Tons: Current Quarter: Total	Current Quarter: Per cent of capacity	Current Quarter: Shipments: Export	Current Quarter: Shipments: To members of the industry for conversion into further finished products	To Date (6 Months 1939): Total	To Date: Per Cent of capacity	To Date: Shipments: Export	To Date: Shipments: To members of the industry for conversion into further finished products
Steel Products	Ingots, blooms, billets, slabs, sheet bars, etc.	31	1	xxxxxxx	481,763	xxx	14,490	342,205	1,099,838	xxx	32,962	734,830
	Heavy structural shapes	8	2	4,691,800	474,293	40.4	22,671	-	933,213	39.8	38,462	xxxxxxx
	Steel piling	3	3	234,300	33,330	56.9	2,374	-	61,753	52.7	3,292	xxxxxxx
	Plates—Sheared and Universal	19	4	5,828,310	504,795	34.6	70,096	4,490	1,007,908	34.6	109,957	7,045
	Skelp	7	5	xxxxxxx	98,431	xxx	1,696	73,565	186,316	xxx	2,411	140,454
	Rails—Standard (over 60 lbs.)	4	6	3,395,300	361,907	42.6	3,015	-	631,668	37.2	6,493	xxxxxxx
	Light (60 lbs. and under)	6	7	418,500	14,291	13.7	7,558	-	33,890	16.2	13,248	xxxxxxx
	All other (Incl. girder, guard, etc.)	2	8	105,000	10,224	38.9	415	-	14,113	26.9	1,367	xxxxxxx
	Splice bar and tie plates	14	9	1,290,550	140,620	43.6	1,268	-	237,080	36.7	2,683	xxxxxxx
	Bars—Merchant	34	10	xxxxxxx	594,803	xxx	22,194	57,554	1,266,361	xxx	40,057	128,744
	Concrete reinforcing—New billet	13	11	xxxxxxx	232,329	xxx	14,373	-	410,418	xxx	27,372	xxxxxxx
	Rerolling	19	12	xxxxxxx	43,152	xxx	1,871	-	74,463	xxx	4,536	xxxxxxx
	Cold finished—Carbon	18	13	xxxxxxx	101,860	xxx	815	-	215,658	xxx	2,338	xxxxxxx
	Alloy—Hot rolled	14	14	xxxxxxx	116,440	xxx	4,885	10,653	268,955	xxx	10,548	22,603
	Cold finished	14	15	xxxxxxx	11,722	xxx	45	-	25,296	xxx	127	xxxxxxx
	Hoops and baling bands	4	16	xxxxxxx	15,534	xxx	161	-	27,549	xxx	344	xxxxxxx
	TOTAL BARS	53	17	11,550,720	1,115,840	38.6	44,344	68,207	2,288,700	39.6	85,322	151,347
	Tool steel bars (rolled and forged)	15	18	94,160	8,443	35.9	454	-	16,308	34.6	1,126	xxxxxxx
	Pipe and tube—B. W.	15	19	1,623,800	179,240	44.2	6,858	-	345,624	42.6	13,253	xxxxxxx
	L. W.	11	20	1,316,580	68,723	20.9	2,904	-	132,963	20.2	4,586	xxxxxxx
	Electric weld	4	21	615,000	52,856	34.4	2,405	-	81,819	26.6	3,555	xxxxxxx
	Seamless	15	22	2,968,900	283,963	38.3	17,209	-	582,799	39.3	33,223	xxxxxxx
	Conduit	6	23	153,670	14,267	37.1	398	-	27,534	35.8	846	xxxxxxx
	Mechanical Tubing	5	24	182,100	20,962	46.0	1,097	-	44,083	48.4	1,903	xxxxxxx
	Wire rods	19	25	xxxxxxx	133,342	xxx	9,141	44,166	278,354	xxx	13,640	92,185
	Wire—Drawn	38	26	1,970,195	261,269	53.0	14,465	2,985	515,558	52.3	28,117	6,811
	Nails and staples	19	27	1,080,760	121,450	44.9	7,135	-	268,754	49.7	12,007	xxxxxxx
	Barbed and twisted	16	28	428,075	50,391	47.1	12,703	-	100,138	46.8	20,548	xxxxxxx
	Woven wire fence	15	29	695,330	66,040	38.0	504	-	134,753	38.8	894	xxxxxxx
	Bale ties	11	30	110,680	15,935	57.6	35	-	24,219	43.8	56	xxxxxxx
	All other wire products	5	31	24,380	1,129	18.5	7	-	2,222	18.2	12	xxxxxxx
	Fence posts	12	32	134,700	15,429	45.8	308	-	28,052	41.7	594	xxxxxxx
	Black plate	12	33	462,815	76,601	66.2	1,809	25,460	156,908	67.8	2,833	55,457
	Tin plate—Hot rolled	10	34	1,540,360	122,544	31.8	21,905	-	244,739	31.8	39,541	xxxxxxx
	Cold reduced	10	35	1,923,200	433,364	90.1	40,053	-	733,068	76.2	66,036	xxxxxxx
	Sheets—Hot rolled	25	36	xxxxxxx	790,951	xxx	51,370	34,516	1,718,372	xxx	107,575	64,245
	Galvanized	16	37	xxxxxxx	255,268	xxx	25,855	-	530,320	xxx	46,813	xxxxxxx
	Cold rolled	18	38	xxxxxxx	356,642	xxx	17,365	5	785,119	xxx	55,084	xxxxxxx
	All other	16	39	xxxxxxx	89,229	xxx	2,524	-	188,951	xxx	6,656	xxxxxxx
	TOTAL SHEETS	27	40	11,315,065	1,492,090	52.7	97,114	34,521	3,222,742	57.0	216,128	64,245
	Strip—Hot rolled	24	41	3,209,300	210,287	26.2	6,609	27,771	467,140	29.1	13,876	62,985
	Cold rolled	36	42	1,160,910	109,693	37.8	1,528	-	246,369	42.4	4,191	xxxxxxx
	Wheels (car, rolled steel)	5	43	380,320	24,204	25.5	154	-	50,121	26.4	679	xxxxxxx
	Axles	5	44	425,900	10,223	9.6	2,122	-	19,444	9.1	2,924	xxxxxxx
	Track spikes	11	45	299,350	29,280	39.1	421	-	50,970	34.1	917	xxxxxxx
	All other	4	46	9,450	2,669	113.0	59	-	4,828	102.2	86	xxxxxxx
	TOTAL STEEL PRODUCTS	135	47	xxxxxxx	7,039,888	xxx	415,704	623,368	14,273,988	xxx	777,768	1,315,359
	Estimated total steel finishing capacity based on a yield from ingots of 70.0 %	-	48	48,514,000	xxxxxxx	52.9	xxxxx	xxxxxxx	xxxxxxx	53.4	xxxxxxx	xxxxxxx
	Pig iron, ferro manganese and spiegel	28	49	xxxxxxx	731,449	xxx	14,134	213,688	1,623,989	xxx	21,899	398,079
	Ingot moulds	4	50	xxxxxxx	50,958	xxx	329	-	118,405	xxx	329	xxxxxxx
Iron Products	Bars	9	51	147,200	6,312	17.2	27	231	13,187	17.9	56	665
	Pipe and tubes	3	52	97,730	10,598	43.4	172	-	19,645	40.2	304	xxxxxxx
	All other	2	53	63,560	3,088	19.4	143	1,287	5,709	18.0	631	2,242
	TOTAL IRON PRODUCTS (ITEMS 51 to 53)	11	54	250,530	19,998	31.9	342	1,518	38,541	30.8	991	2,907

Total number of companies included - 156

Total steel products produced for sale, less shipments to members of the industry for conversion into further finished products Current quarter 6,416,520 *G.T.;* 52.9 *% of Finishing Capacity.*
To date 12,958,629 *G.T.;* 53.4 *% of Finishing Capacity.*
The above tonnages represent 70.9 *% of the ingots produced by companies whose products are included above.*

MEETINGS

1940 A. F. A. CONVENTION AND SHOW IN CHICAGO

■ AMERICAN Foundrymen's association will hold its forty-fourth annual convention in Chicago, May 6-10, and with it an exhibit of foundry equipment and supplies. This, the association's first major exhibit in Chicago since 1914, will be housed in the International Amphitheater. The exhibition will be opened at noon, Saturday, May 4, and continue through the evening; reopening Monday, May 6, with the start of the convention and running concurrently with it.

It is expected interest and attendance will exceed that of any prior convention. Daytime sessions will be conducted at the Stock Yards Inn, Saddle and Sirloin club and the Amphitheater; evening meetings at the Palmer House, convention headquarters.

FOUNDRY EQUIPMENT GROUP PLANS INDUSTRIAL CLINIC

A clinic of the business situation in the equipment field will be conducted at the annual meeting of the Foundry Equipment Manufacturers' association at the Greenbrier hotel, White Sulphur Springs, W. Va., Oct. 6-7. This meeting was originally scheduled for last spring but was subsequently postponed.

Holding of the clinic is justified in view of the fact that considerable importance attaches to employment in the capital goods industry, of which equipment is a definite part. The discussion will serve to guide future activities of the association and individual members. Other features of the program will be election of three new directors and a golf tournament.

All manufacturers of equipment used in foundries are invited to attend the meeting. Arthur J. Tuscany, Penton building, Cleveland, is executive secretary of the association.

GEARMAKERS' SEMIANNUAL MEETING IN MICHIGAN

American Gear Manufacturers' association will conduct its twenty-second semiannual meeting at Whitcomb Sulphur Springs, St. Joseph, Mich., Oct. 16-18. Program will be announced later.

STEEL ENGINEERS SHAPING PITTSBURGH MEETING PLANS

A comprehensive technical program, comprising 25 papers by leading authorities on steel plant practice, will feature the thirty-fifth annual convention and iron and steel exposition of the Association of Iron and Steel Engineers at the William Penn hotel, Pittsburgh, Sept. 26-29. Over 5000 steel mill engineers and operating executives from every important mill center in the country are expected to attend.

Over 100 steel mill equipment manufacturers have contracted for 20,000 square feet of space in the exposition. It is reported that a number of new developments will be shown for the first time.

Two large steel plants in the Pittsburgh district will be visited during the convention. One will be the new Irvin works of Carnegie-Illinois Steel Corp. on the afternoon of Sept. 27, the other the Edgar Thomson works of the same company on the morning of Sept. 29.

HOT DIP GALVANIZERS TO CONVENE IN CLEVELAND

American Hot Dip Galvanizers' association will conduct its semiannual meeting at Hotel Statler, Cleveland, Aug. 24-25. First day's program provides for morning technical session, and afternoon business session, a luncheon and banquet; directors will convene on the morning of the second day. Members of the industry not affiliated with the association are being invited to attend the technical session and social functions.

Technical papers scheduled are: "Grief in the Galvanizing Shop," by J. D. Tate, Witt Cornice Co., Cincinnati; "Temperature Regulation," by Clem Stein, industrial sales department, International Stacey Corp., Columbus, O.; "Aluminum in Hot Dip Galvanizing Baths," and "Embrittlement of Malleable Iron Castings," by W. G. Imhoff, technical director of research for the association.

EXHIBIT NEW FEATURE OF S.A.E. AIRCRAFT MEETING

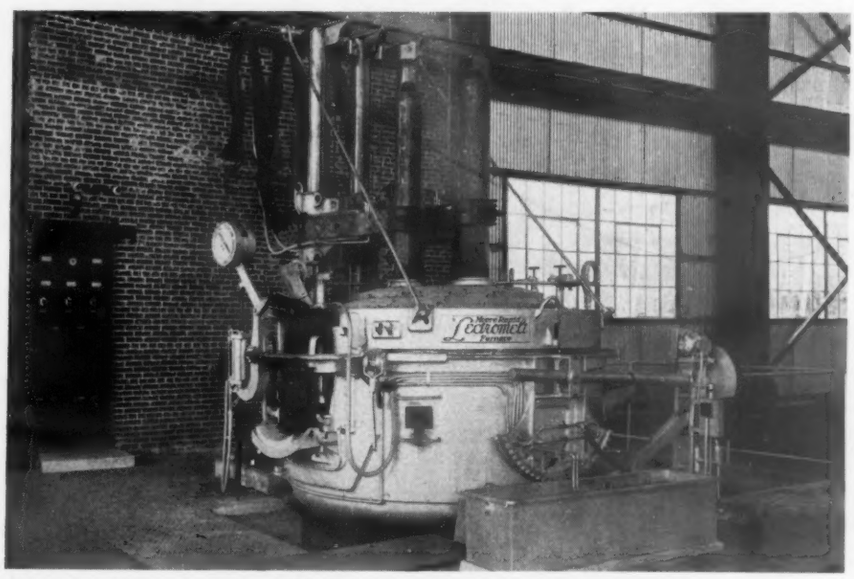
National aircraft production meeting of the Society of Automotive Engineers, Hotel Biltmore, Los Angeles, Oct. 5-7, will feature an aircraft engineering display, first to be arranged in connection with the society's meetings. It is being developed at the request of leading aircraft engineers and executives who have participated actively in the production meetings since their inception in 1936.

MINING INSTITUTE WILL INSPECT ORE PROPERTIES

Lake Superior Mining institute announces its annual meeting for Sept. 14-15. Convening at the Gogebic Country club, Ironwood, Mich., on the morning of the first day, members and guests will make visits to various mining properties. Second day will be spent at the Gateway Inn, Land O'Lakes, with the annual meeting and banquet in the evening. C. J. Stakel, Ishpeming, Mich., is secretary.

■ Streamlined steel newel posts in chromium and bright-colored finishes are replacing wood posts in bowling alleys, according to James Sayre, president, Sayre Mfg. Co., Milwaukee, maker of bowling alley equipment.

Billets Made from Electric Steel in Birmingham



■ **Connors Steel Co., Birmingham, Ala., has installed this 6-ton electric furnace, first in the Birmingham district for producing carbon and alloy steel billets. The company will roll cotton ties, barrel hoops, strip and light structural shapes from electric steel, while reinforcing bars, merchant bars, shapes and other products will be furnished either from rail steel or the electric furnace steel**

Editorial

Looking Toward 1940

■ THE 1939 SESSION of congress was the costliest in our history for times of peace. Authorized expenditures aggregated more than $13,000,000,000. The only important economy move was that in the closing days when the house killed the President's spend-lend program, and even in this case the economy motive did not predominate entirely, for many of the votes that killed the bill were actuated politically.

Aside from eliminating the last vestiges of the undistributed profits tax on corporations, freezing payroll taxes at the present level for three years, and a few other minor acts, this congress did not do a great deal actually to help business. On the other hand, it did a lot to hearten business. It refrained from embarrassing business with any further important legislation of a reform character. It showed a strong tendency, which grew more marked as time passed, to turn to the right. It took action which may pave the way for further help to business at the next session.

Survey of Taxation, Labor Relations May Open Way to Better Understanding

For example, the house and ways and means committee, in the belief that the 1939 tax law did not provide sufficient relief to business, during the recess will review the whole subject of taxation with a view to recommending wholesale revisions in 1940. A special house committee at the same time will investigate the national labor relations board, with a view to determining to what extent the board has functioned within or beyond the Wagner act. It is considered as more than likely that revision of both the Wagner act and the wages and hours act will come up for debate next year.

So the behavior of this congress, particularly in the few weeks just prior to adjournment, has had a lot to do with the recent rise in the level of business confidence.

STEEL has noted a number of instances in the past few weeks where trade association executives have advised their members to make a special point of meeting with their congressional representatives during the recess and discussing with them the various factors which have prevented private industry from providing employment on a wider scale. This is sound advice which well may be followed by business executives in general.

Industry Should Inform Legislators On Needed Reforms During Recess

For when congress meets next January it probably will be confronted with somewhat the same picture as when it began its last session. There will be neutrality, the farm problem, relief, and all the individual problems included in these and other main problems. There will be the usual pressure *blocs* pulling this way and that. Left wingers will continue to voice demands for further socializing business at the expense of private industry. In other words, the congressional record in 1940 is likely to take form in an atmosphere of confusion not a great deal different from that which characterized the 1939 session.

The recess period over the remainder of this year is a good time for employers to inform congressmen as to what is good or bad for business. They can do it best by talking in terms of employment, an approach that readily should be appreciated by the average legislator. For a politician who can point to a record of stimulating employment and bettering the condition of his constituents need have little fear of results on election day.

The BUSINESS TREND

Steel Rate Resists Easier Trend in Activity Index

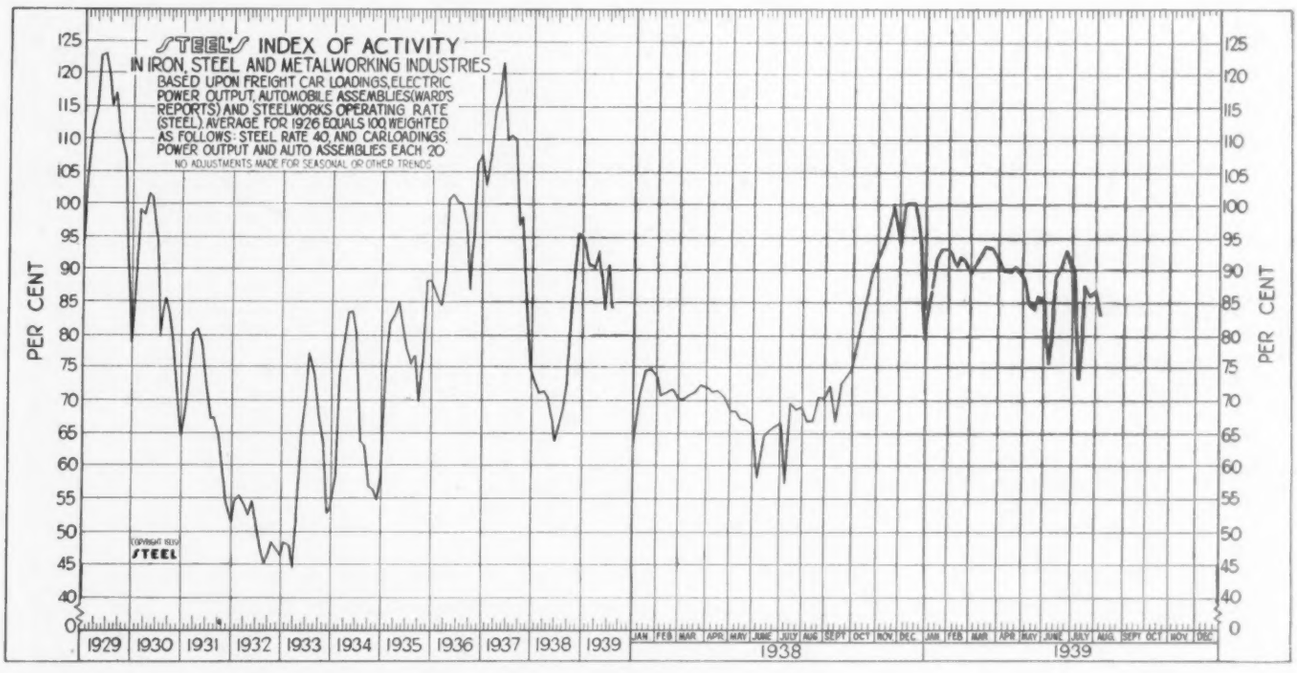
■ Industrial activity suffered a mild reaction in the week ended Aug. 5 from the slight upswing registered in the preceding week. As a result STEEL'S index of activity in the iron, steel and metalworking industries eased 3.3 points to 83.5. However, the index remains well above the 66.9 level recorded in the same week last year.

Contributing to the recent decline in the activity index for the week ended July 23 were moderate losses in two of the four business indicators from which the index is composed.

The national steel rate remained unchanged in the week ended Aug. 5, at the highest level of the year, following the sharp rise since the Fourth of July holiday week. Current indications point to additional gains in steelworks operations, but not of such proportions as witnessed since early July. In the comparable week last year the national steel rate stood at 40 per cent.

As anticipated automobile output declined seasonally during the week ended Aug. 5, to 28,250 units. This represents the lowest point reached in motor car output since the current seasonal decline got underway preparatory to 1940 model production. In the comparable week a year ago output of automobiles and trucks totaled 14,771. The current downward tendency in motor car assemblies should be reversed during the latter part of August as production of 1940 models gets underway.

The other business indicator composing STEEL'S index to suffer a mild reaction during the week ended


STEEL'S INDEX OF ACTIVITY
IN IRON, STEEL AND METALWORKING INDUSTRIES
BASED UPON FREIGHT CAR LOADINGS, ELECTRIC POWER OUTPUT, AUTOMOBILE ASSEMBLIES (WARD'S REPORTS) AND STEELWORKS OPERATING RATE (STEEL). AVERAGE FOR 1926 EQUALS 100 WEIGHTED AS FOLLOWS: STEEL RATE 40, AND CARLOADINGS, POWER OUTPUT AND AUTO ASSEMBLIES EACH 20
NO ADJUSTMENTS MADE FOR SEASONAL OR OTHER TRENDS
PER CENT
COPYRIGHT 1939 STEEL
1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939
1938
1939

STEEL'S index of activity declined 3.3 points to 83.5 in the week ended Aug. 5:

Week ending	1939	1938
May 20	86.6	67.1
May 27	85.4	66.5
June 3	75.9	58.1
June 10	88.2	64.4
June 17	90.9	65.2
June 24	93.0	66.0
July 1	91.0	66.5
July 8	73.4	57.1
July 15	87.8	69.9
July 22	86.0	68.7
July 29	86.8	69.0
Aug. 5	83.5	66.9

Mo. Data	1939	1938	1937	1936	1935	1934	1933	1932	1931	1930	1929
Jan.	91.1	73.3	102.9	85.9	74.2	58.8	48.6	54.6	69.1	87.6	104.1
Feb.	90.8	71.1	106.8	84.3	82.0	73.9	48.2	55.3	75.5	99.2	111.2
March	92.6	71.2	114.4	88.7	83.1	78.9	44.5	54.2	80.4	98.6	114.0
April	89.8	70.8	116.6	100.8	85.0	83.6	52.4	52.8	81.0	101.7	122.5
May	83.4	67.4	121.7	101.8	81.8	83.7	63.5	54.8	78.6	101.2	122.9
June	90.9	63.4	109.9	100.3	77.4	80.6	70.3	51.4	72.1	95.8	120.3
July	83.7	66.2	110.4	100.1	75.3	63.7	77.1	47.1	67.3	79.9	115.2
Aug.	....	68.7	110.0	97.1	76.7	63.0	74.1	45.0	67.4	85.4	116.9
Sept.	....	72.5	96.8	86.7	69.7	56.9	68.0	46.5	64.3	83.7	110.8
Oct.	....	83.6	98.1	94.8	77.0	56.4	63.1	48.4	59.2	78.8	107.1
Nov.	....	95.9	84.1	106.4	88.1	54.9	52.8	47.5	54.4	71.0	92.2
Dec.	....	95.1	74.7	107.6	88.2	58.9	54.0	46.2	51.3	64.3	78.3

Aug. 5, were electric power consumption and revenue freight carloadings. Power output in that week totaled 2,325,085,000 kilowatt-hours, down slightly from the 2,341,822,000 kilowatt-hours consumed in the preceding week. A year ago power output was substantially below the current level.

Freight traffic increased moderately in the week ended Aug. 5, to 661,136 cars, compared with 659,764 in the preceding week.

JULY CAR AWARDS IN SHARP DECLINE

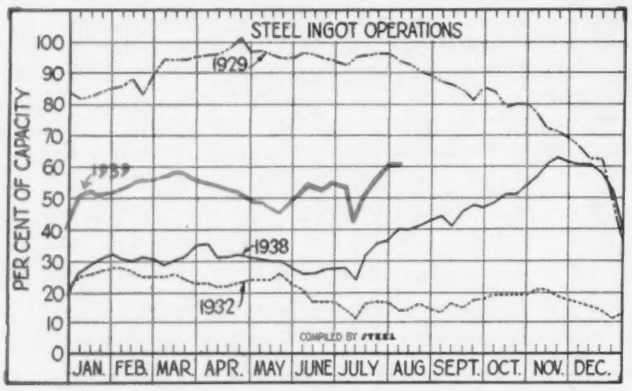
Domestic freight car awards during July totaled only 110 cars, down sharply from the 1324 cars ordered during June, but is still a better showing than recorded in July, 1938, when there were no cars ordered. In the first seven months this year car awards aggregated 9642, against 8021 in the corresponding period of 1938, 47,015 in the same period of 1937 and 35,338 in the first half of 1936.

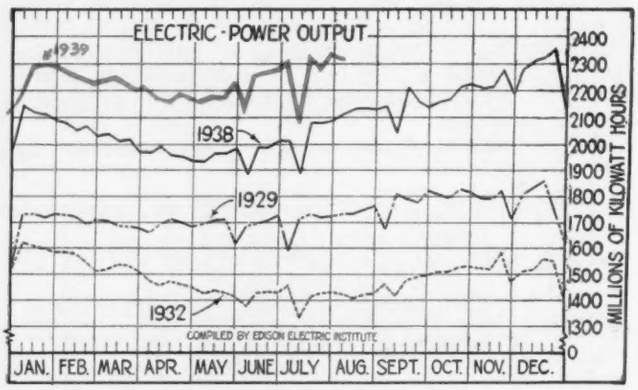
DAILY AVERAGE INGOT OUTPUT IMPROVES

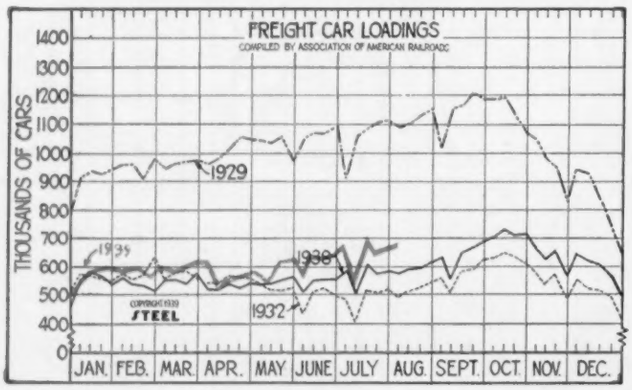
The daily average ingot production during July was 131,558 gross tons, based on the total output for the month of 3,288,949 gross tons reported by the American Iron and Steel institute. This compares with a daily average of 120,399 in June and 79,282 tons in July, 1938. Ingot operations last month averaged 54.50 per cent of capacity, against 52.63 per cent in June and 33.29 per cent in July of last year. For the seven months this year ingot production totaled 21,879,729 tons, or an increase of 71.4 per cent over the 12,762,900 tons of ingots produced in the comparable period last year.

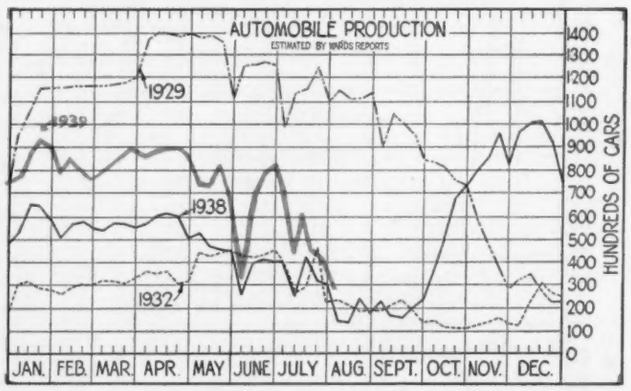
PIG IRON OUTPUT UP 7.6 PER CENT IN JULY

Average daily coke pig iron production in the United States amounted to 76,001 gross tons during July, an increase of 5354 tons or 7.6 per cent over the June daily average of 70,647 tons. Excluding March, the daily average production during July exceeded any month this year. In June, 1938, average daily production was 39,131 tons. Total output in the first seven months this year aggregated 14,877,167 tons, or 62.9 per cent over the 9,144,174 tons produced in the comparable 1938 period. Relating production to capacity operations in July averaged 55 per cent, against 51.4 per cent in June. The operating rate in July last year was 28.2 per cent. Number of stacks in blast July 31 totaled 129, the largest number since November, 1937.

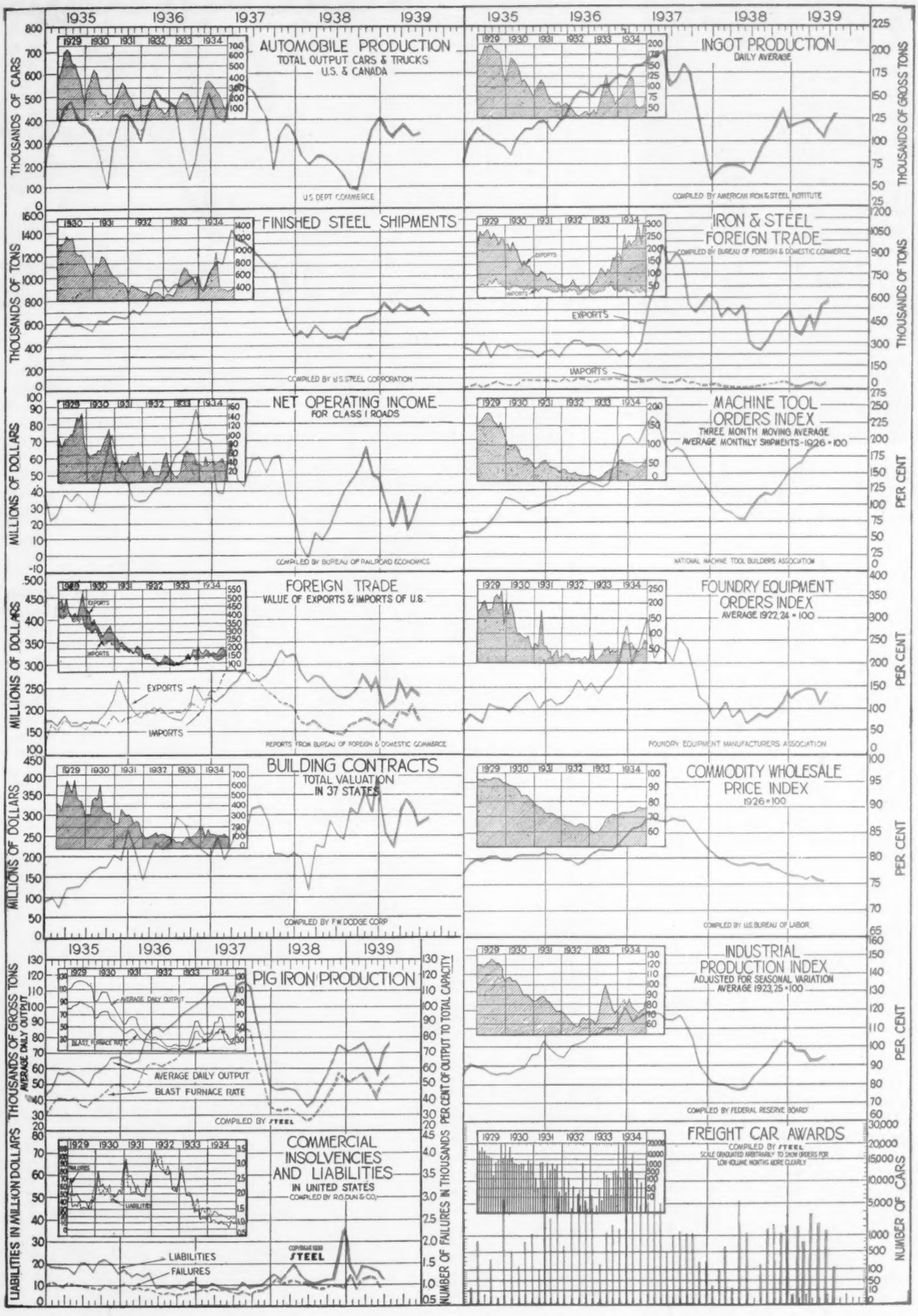




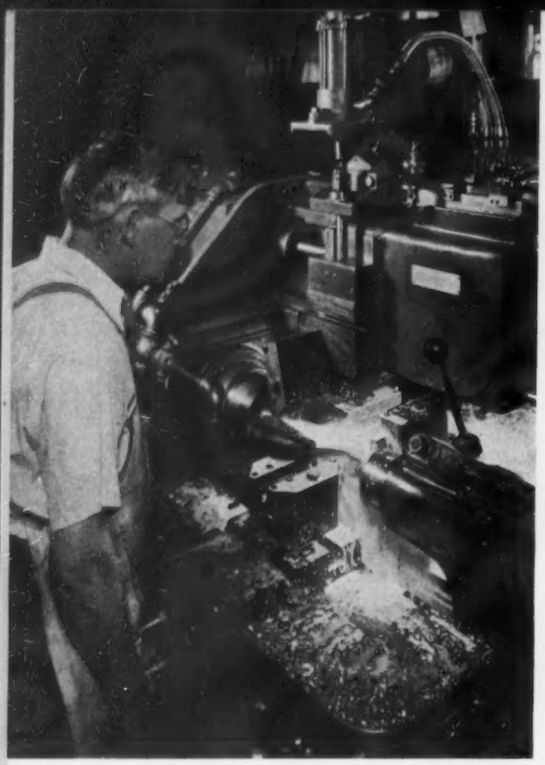




	Steelworks Operating Rate Per Cent				Electric Power Output Million KWH			Freight Car Loadings Thousands of Cars					Weekly Auto Output			
Week ending	**1939**	**1938**	**1932**	**1929**	**1939**	**1938**	**1932**	**1929**	**1939**	**1938**	**1932**	**1929**	**1939**	**1938**	**1932**	**1929**
Apr. 22	50.5	32.5	23.0	98.0	2,199	1,951	1,469	1,709	559	524	562	1,004	90,280	60,563	30,672	140,290
Apr. 29	49.0	32.0	24.0	101.0	2,183	1,939	1,445	1,700	586	543	554	1,052	86,640	50,755	31,121	139,732
May 6	49.0	31.0	24.0	97.0	2,164	1,939	1,429	1,688	573	536	534	1,050	71,420	53,385	43,899	140,672
May 13	47.0	30.0	24.0	97.0	2,171	1,968	1,436	1,698	555	542	517	1,048	72,375	47,415	42,587	138,541
May 20	45.5	30.0	25.5	96.0	2,170	1,968	1,435	1,704	616	546	516	1,046	80,145	46,810	43,470	139,528
May 27	48.0	28.5	23.0	95.0	2,205	1,973	1,425	1,705	628	562	521	1,061	67,740	45,120	45,121	136,032
June 3	52.0	25.5	21.0	95.0	2,114	1,879	1,381	1,615	568	503	447	972	32,445	26,980	44,116	111,372
June 10	53.5	25.5	17.0	96.5	2,257	1,992	1,435	1,690	635	554	502	1,055	65,265	40,175	43,491	125,307
June 17	52.5	27.0	17.0	96.0	2,265	1,991	1,441	1,699	638	556	518	1,069	78,305	41,790	44,121	126,125
June 24	54.5	28.0	17.0	94.0	2,285	2,019	1,440	1,723	643	559	499	1,096	81,070	40,918	45,110	125,736
July 1	54.0	28.0	14.5	93.0	2,300	2,015	1,456	1,592	666	559	480	909	70,663	40,945	40,291	98,746
July 8	42.0	24.0	12.0	95.0	2,078	1,881	1,341	1,712	559	501	416	1,065	42,784	25,375	26,560	113,586
July 15	50.5	32.0	15.5	95.5	2,234	2,084	1,415	1,727	674	602	504	1,079	61,610	42,010	29,870	115,075
July 22	56.5	36.0	16.5	96.0	2,295	2,085	1,433	1,723	657	581	502	1,101	47,420	32,070	46,375	123,512
July 29	60.0	37.0	16.5	96.0	2,342	2,094	1,440	1,725	660	589	511	1,104	40,595	30,390	22,461	110,163
Aug. 5	60.0	40.0	14.5	94.0	2,325	2,116	1,426	1,730	661	584	497	1,091	28,250	14,771	23,591	114,364


1935 1936 1937 1938 1939
AUTOMOBILE PRODUCTION
TOTAL OUTPUT CARS & TRUCKS U.S. & CANADA
THOUSANDS OF CARS
U.S. DEPT COMMERCE
INGOT PRODUCTION
DAILY AVERAGE
THOUSANDS OF GROSS TONS
COMPILED BY AMERICAN IRON & STEEL INSTITUTE
FINISHED STEEL SHIPMENTS
THOUSANDS OF TONS
COMPILED BY U.S. STEEL CORPORATION
IRON & STEEL FOREIGN TRADE
COMPILED BY BUREAU OF FOREIGN & DOMESTIC COMMERCE
EXPORTS
IMPORTS
NET OPERATING INCOME
FOR CLASS I ROADS
MILLIONS OF DOLLARS
COMPILED BY BUREAU OF RAILROAD ECONOMICS
MACHINE TOOL ORDERS INDEX
THREE MONTH MOVING AVERAGE
AVERAGE MONTHLY SHIPMENTS - 1926 = 100
PER CENT
NATIONAL MACHINE TOOL BUILDERS ASSOCIATION
FOREIGN TRADE
VALUE OF EXPORTS & IMPORTS OF U.S.
REPORTS FROM BUREAU OF FOREIGN & DOMESTIC COMMERCE
FOUNDRY EQUIPMENT ORDERS INDEX
AVERAGE 1922-24 = 100
FOUNDRY EQUIPMENT MANUFACTURERS ASSOCIATION
BUILDING CONTRACTS
TOTAL VALUATION IN 37 STATES
COMPILED BY F.W. DODGE CORP
COMMODITY WHOLESALE PRICE INDEX
1926 = 100
COMPILED BY U.S. BUREAU OF LABOR
PIG IRON PRODUCTION
AVERAGE DAILY OUTPUT
BLAST FURNACE RATE
THOUSANDS OF GROSS TONS
PER CENT OF OUTPUT TO TOTAL CAPACITY
COMPILED BY STEEL
INDUSTRIAL PRODUCTION INDEX
ADJUSTED FOR SEASONAL VARIATION
AVERAGE 1923-25 = 100
COMPILED BY FEDERAL RESERVE BOARD
COMMERCIAL INSOLVENCIES AND LIABILITIES
IN UNITED STATES
COMPILED BY R.G. DUN & CO.
LIABILITIES IN MILLION DOLLARS
NUMBER OF FAILURES IN THOUSANDS
LIABILITIES
FAILURES
COPYRIGHT 1939 STEEL
FREIGHT CAR AWARDS
COMPILED BY STEEL
SCALE GRADUATED ARBITRARILY TO SHOW ORDERS FOR LOW-VOLUME MONTHS MORE CLEARLY
NUMBER OF CARS

JIGS, FIXTURES, *Vital* TO MODERN



Auxiliary overhead slide on Sundstrand automatic lathe carries air-operated attachment which instantly brings tool into cutting position behind shoulder

■ CONSIDERABLE has been said in previous articles of this series, as to importance of recent developments in tooling in connection with modern machine tools. I have borne down heavily on the theme that such developments since 1935 in themselves justify the National machine tool show which is to be held in Cleveland early in October. I have emphasized the fact that these developments make it mandatory for everyone vitally concerned with metalworking to attend this show—even though the purchase of new machine tools may not be an immediate possibility.

Scope of Tooling Developments

In this article I want to make it clear that in using the general term "tooling developments," I have in mind not only the actual cutting tools and the holders, etc. which are intimately related to them, but that I also have very definitely in mind that less clearly defined and much too little appreciated collection of things usually lumped under the heading of "jigs, fixtures and attachments."

It would almost seem as though jigs, fixtures, and attachments would now be thoroughly understood and fully appreciated, inasmuch as their history goes back even before the days of Eli Whitney who was their first vigorous promotor. Hardened steel "filing jigs" for the hand shaping of gun parts actually were in use before the advent of machine tools. That they are not understood or appreciated as they should be is, however, all too apparent in many cases when advanced tooling programs come up for consideration by "the powers that be".

The situation was neatly summed up by Frederick S. Blackall, Jr., president and treasurer, Taft-Peirce Mfg. Co., Woonsocket, R. I., in the "Forum on Re-Employment" in the May 15 issue of STEEL. Speaking of "industrial preparedness", Mr. Blackall says:

"There is no more important phase of this question than the design and manufacture of the jigs and fixtures, the punches and dies, the molds, the gages, and the other production and inspection tools which are heart and soul of the mass production process. Without these vital tools of industry, there could be no mass production process, no interchangeability of parts. Tools, in truth, are the very foundation of our modern industrial economy.

"It is a curious thing that even trained engineers frequently talk glibly of future production plans in a way which seems to take for granted that the tools, by some magic wand, will be conjured out of the air when the release date finally arrives. Too late it is realized that weeks or months of frenzied tooling effort are pre-requisite to the actual production process."

An excellent reason for bringing up this subject of jigs, fixtures and attachments just at this time, and in connection with the forthcoming National machine tool show, is that these elements today are much more intimately tied in with production machine tools than they were a few years ago.

Jigs and fixtures very commonly used to be primitive looking cast iron boxes, plates, angles, clamps, etc. which seemed to bear about the same relation to a neatly designed machine tool as a temporary flight of rough plank steps does to a beautiful public building. Their rough appearance would not have been a serious drawback had they always been efficient in action. Unfortunately, many of them were just as tough to use as to look at.

There lately has been a tremendous change — almost a revolutionary change—in the attitude of machine tool builders toward these vital elements. Not until I began to make the rounds of the industry during the past year did I realize fully the extent to which machine

Natco machine shown on this page embodies dual jig and fixture in which Mack cylinder blocks are drilled for oil line, rough bored for crankshaft and camshaft bearing seats, and drilled for idler gear and magneto mounting Foote Burt multiple drill, on opposite page, has built in jig and fixture through which all stud holes in the Mack motor head are drilled simultaneously by multiple spindle head. Photos courtesy International Nickel Co.

ATTACHMENTS — *Allies* MACHINE TOOLS

By GUY HUBBARD
Machine Tool Editor

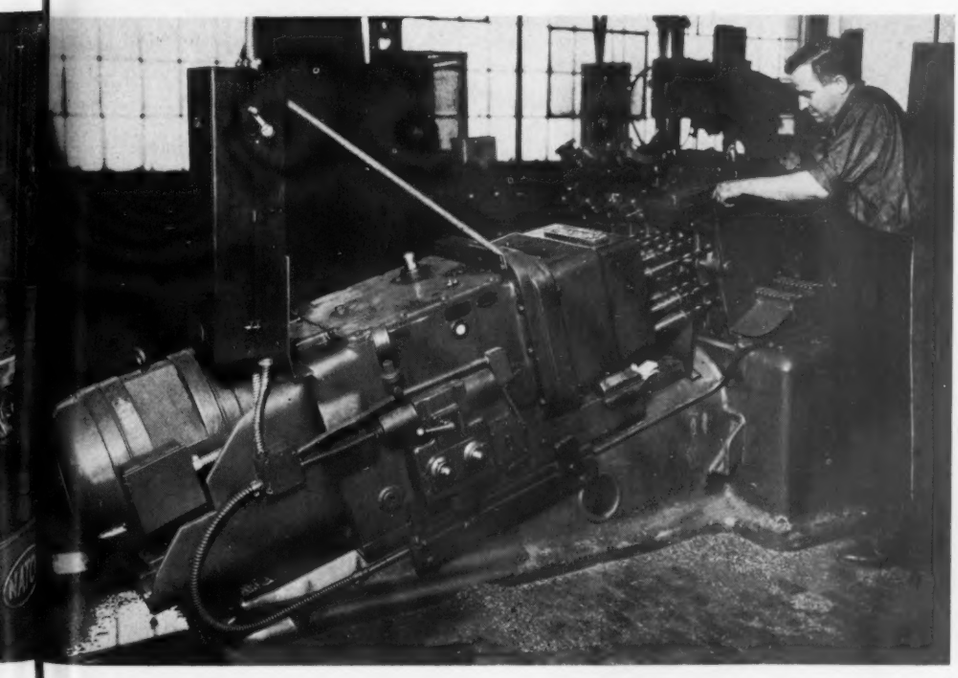
tool builders are now in the jig, fixture and attachment business. Not until my recent visits to their plants did I realize what a splendid job they are now doing.

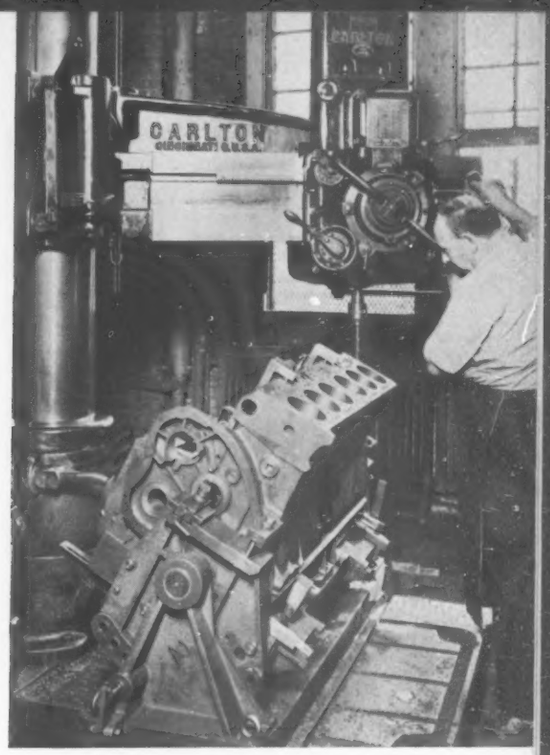
In the first place, these elements are being carefully thought out as integral parts of the machines. This is true especially in connection with way type drilling machines, manufacturing milling and broaching machines, centerless grinders, high speed boring and turning machines and various other equipment of high production type.

Fully as much care is now being devoted to the engineering and the construction of these work holding and tool guiding elements as is devoted to the basic machine tool. More than ever before, the result is something which to all intents and purposes is an integral part of the basic machine—even though it is designed to be divorced from the basic machine with minimum disturbance in the event of changes in the product being machined.

To make clear the importance of all this, I present herewith some practical examples. The illustration at the top of the lefthand page shows effective use of an attachment in connection with a Sundstrand automatic lathe tooled up on a tapered valve plug. Note that on the auxiliary overhead slide there is an air cylinder attachment, the object of which is to provide quick approach to depth of a tool which operates on the stem behind the large end of the tapered body.

At the bottom of the lefthand page, a Natco way type boring and reaming machine is shown in simultaneous operation on Mack truck cylinder blocks—one block facing in one direction and the other in the opposite direction. The dual jig and fixture which is built into this machine provides for quick loading, rigid support and exact location of the blocks—as well as precise guidance and rigid support of the long drills, boring bars and reamers involved in this set of operations. While strictly utilitarian in design, this combined jig and fixture is neat appearing without sacrifice of any of its strength, rigidity or operating convenience.





Radial drilling operations on Mack cylinder blocks are facilitated by adjustable tilting fixture which eliminates difficulties of locating, blocking and clamping

The Foote Burt machine depicted at the bottom of the righthand page demonstrates simultaneous use of a large number of drills in a confined space. This demands exceedingly close spindle spacing and high power drive and feed. At the same time it demands a quick-acting jig and fixture which will hold these Mack motor heads accurately and rigidly against the heavy thrust of the drill cluster, and which will guide the drills to close limits and give them solid support. Incidentally, the angle of the entire assembly gives maximum convenience in operation.

While the illustration at the top of the righthand page shows a relatively simple machining operation, the adjustable tilting fixture in conjunction with this heavy duty radial drill gives quick, positive action on holes which otherwise could not be reached without laboriously "horsing" the block around, tediously adjusting it to the proper angles, and then blocking and clamping it with no certainty of its "staying put."

Electric-eye measurement of bath temperature

Enlarges OPEN-HEARTH S

This article was prepared by the operating staff of Inland Steel Co.'s open hearth department

■ MANY INTERESTING features are incorporated in the five new open-hearth furnaces recently placed in operation by Inland Steel Co., Chicago, at its No. 2 plant, Indiana Harbor, Ind. With 15 original furnaces and four more added in October, 1936, the five new furnaces bring the total to 24 open hearths. The shop now is well over a half-mile in length, possibly the largest in the steel industry.

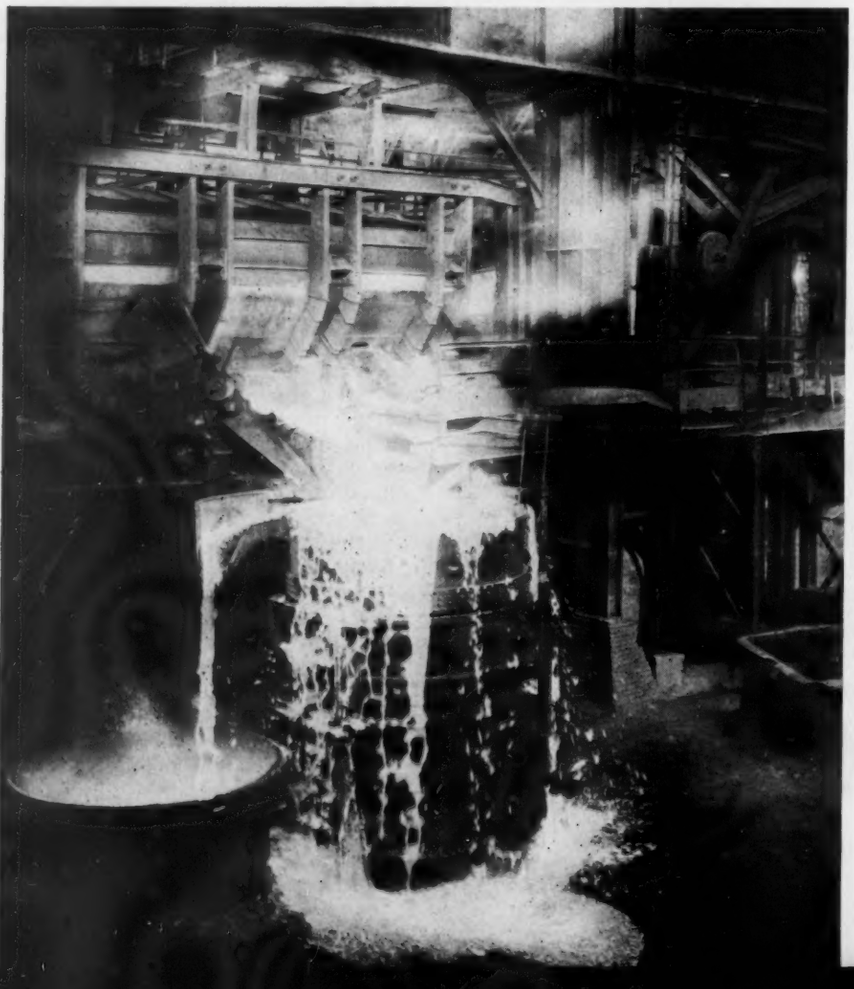
The nine most recently-added furnaces were built to the same general specifications and are of 150 tons capacity each. The overall dimension outside the brick work is 70 feet, 1 inch, this length being limited by the decision to hold to the same building design as in the old shop. This meant that these 150-ton furnaces had to be built into bays which were 80 feet center to center, the same as the old 125-ton furnaces which were originally designed for 75-ton capacity.

To provide sufficient hearth capacity, checker capacity and size of uptakes and to give due consideration to brick economy from the standpoint of gas velocities in the furnace system, every bit of available space had to be utilized, making necessary some interesting departures from orthodox construction. To obtain the desired capacity and hold within the limiting overall length, a 33-inch depth of bath was required. The hearth is 16 feet wide and 43 feet long inside of brick at foreplate level, making a total of 623 square feet, or an area of 4.15 square feet per ton of steel produced.

Furnace bottom rests on 24-inch I-beams on two large concrete piers. The cross beams are cut in an area 11 feet square at the taphole to give an added depth of hearth bottom of 4½ inches. The taphole casting is set at right angles to the slope of the runner. Below the taphole casting is a brick-lined steel box filled with raw dolomite concrete which protects the beams when the furnace is draining. The chill box design is quite shallow to provide required hearth length with sufficient depth of material on the hearth ends.

Chrome Brick in Sidewalls

The bottom consists of 18 inches of dead-burnt Magnesite at taphole, on 6 inches of plastic chrome, on 15 inches of firebrick, on 2½ inches of insulating brick, on 1 inch of Thermo-flake concrete. Sidewalls are of first quality firebrick and chrome brick covered with plastic chrome. The firebrick is battered from 27 inches to 13½ inches at the foreplate and is faced with 9-inch chrome brick laid as headers to take care of expansion. Plastic chrome is 4 inches at the bottom and is battered to 2 inches at the foreplate-front and back. The front-wall above foreplate consists of a 22½



Tapping an Inland open-hearth furnace, showing slag overflow from top of ladle

H SHOP

Five new 150-ton furnaces make a total of 24 open hearths now in operation. Bath temperatures measured by an electric eye sighted through a tube immersed in bath. Air flow keeps slag and molten metal out of tube

inch wall battered to 18 inches at the skew, the top 12 inches being silica brick, with chrome brick below. The sloping backwall is covered with 9 inches of firebrick and 9 inches of chrome brick, all laid headers.

Furnace roof is of 16-inch silica brick with 22½-inch thickness 6 feet out from the backwall. There are two 18-inch rib courses, one over each end door. The distance from foreplate to skewback is exactly 5 feet. The rise of the roof arch is 30 inches. Roof insulation consists of 2 inches of Thermo-flake granules covered with a 1-inch coating. The insulation was put on after the furnace was brought up to temperature.

The uptakes have a combined area of 83 square feet and the area of throat at bridgewall is 92 square feet. The front end panel is constructed of 22½-inch bonded chrome; the back end panel is of 18-inch Metalkase.

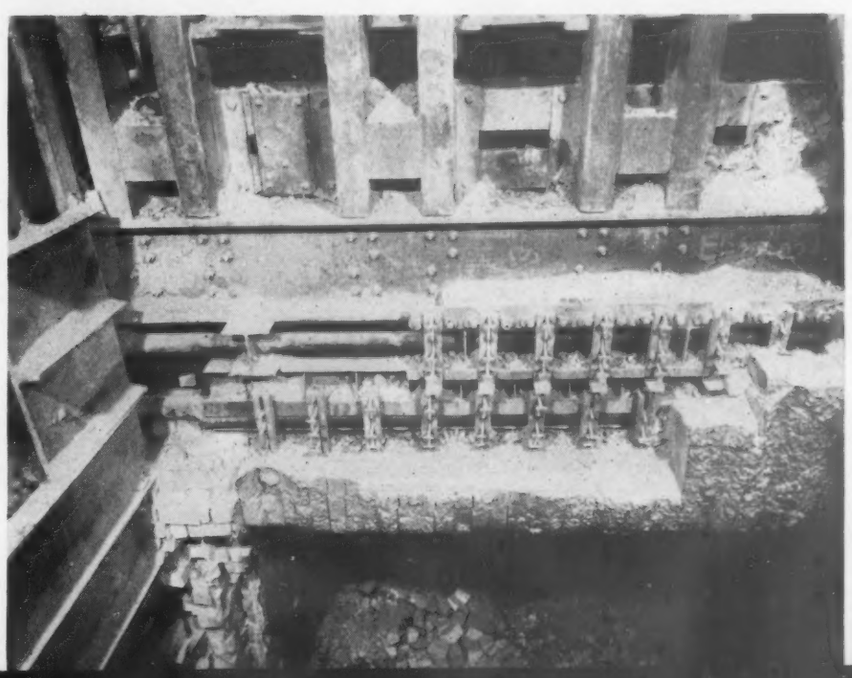
Heavy Slabs in Binding

Furnace binding is all of heavy slab construction. The front buckstays adjoining the doors are 16 x 6 inches with slots milled out on the inside next to brick 3-inch water-cooled piping. Doors and frames are water-cooled. The frame has a slight slope to provide a seal with the door.

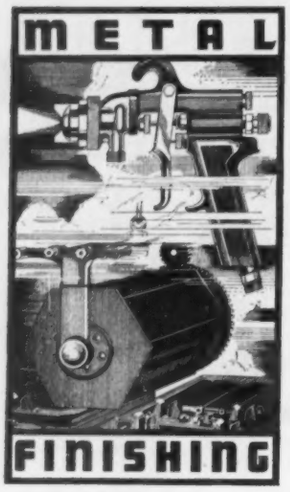
Buck stays beyond the body of the furnace on the sides are 10 x 5 inches and the end bucks are 12 x 5 inches. These end buck stays are protected by 2½-inch insulating brick.

Slag pockets are 14 feet, 5 inches wide by 17 feet, 4 inches long. The binding consists of 12 x 4-inch slabs. Walls are 18 inches in thickness, the first 3 feet being firebrick with silica brick above. The floor is 9½ inches of firebrick, on 4½ inches of insulating brick, on ¾-inch insulating concrete. The sides and ends are insulated. Height from floor to rise of uptake dividing wall arch is 15 feet. This division wall between uptakes which carries the dog-house cooler

(*Please turn to Page* 62)



Showing portion of nose which heads the flat suspended roofs over checker chambers, upper view. Lower shows closeup of Simplex nose and the suspending brackets



Making Plows

While hand methods predominate, certain operations are highly mechanized. Plow points, hooked on a chain conveyor, are painted by a battery of spray nozzles, dried on the chain, discharged to a chute and stenciled

By FRED B. JACOBS

■ WHILE there are no fixed standards or rules to follow in plow design, production costs in plow manufacture can be kept within reason by following scientific rules. The metallurgical engineer helps solve problems in the foundry department. . . . Modern abrasive equipment also helps. If plowmakers of today reverted to grindstones or emery wheels of other days, production costs would be prohibitive.

Modern plows must be highly finished, not for appearance alone but because a high finish is necessary to permit the plow to "scour" or "shed" readily when in use.

Plant of Syracuse Chilled Plow Co., Inc., Syracuse, N. Y., a subsidiary of Deere & Co., 60 years ago started with an output of less than 1000 plows a year. Now this number is made in a period of days.

Grinding and polishing operations predominate in finishing the several components which are assembled into the plow base. Finishing operations on plow parts begin directly after the castings are shaken out of the sand. Castings go from the foundry to the mill room where they are rattled in tumbling barrels to clean them thoroughly of sand. After inspection, castings go to trimming room. Here mold boards, points, shin pieces and landsides are ground to fit templets and gages to assure accuracy in assembly. Operator in Fig. 1 is fitting a mold board, while the man at the left in Fig. 3 is fitting shares. Another important operation also is shown in Fig. 3. Operator at right is pinning or drifting the parts to master forms for inspection. Fitting is important as the different units such as mold boards, points, etc., often are sold separately and so must be interchangeable.

Fig. 1—Operator fitting a mold board

Plow-point grinding is illustrated in Fig. 2. Here front edge of the share is ground to a fairly sharp edge so it will cut the soil freely. This is done on a silicon carbide wheel, 18 inches in diameter, 2-inch face, run at a surface speed of 5000 feet per minute.

High Polish Necessary

Plow surfacing is divided into two general operations, completed plow bases and surfacing of separate units to be sold as repair parts. A surfacing operation is shown in Fig. 4. Operator locates the work on a cradle which is free to be passed under the wheel. This is called the American method of plow grinding.

Both repair parts and complete plow bases must be highly polished to bring out an attractive finish and to insure the plow working satisfactorily with a minimum amount of draft.

The polishing setup does not differ materially from that followed in grinding as the same type of machines are used and the holding methods are the same. Polishing wheels are made of heavy canvas sections, riveted together. Wheels are 24 inches in diameter, 3-inch face. First the parts are put under wheels set up with No. 24 material, followed by polishing with No. 60 grit.

As may be imagined, this is severe polishing and therefore hard on the wheels. Thus considerable care

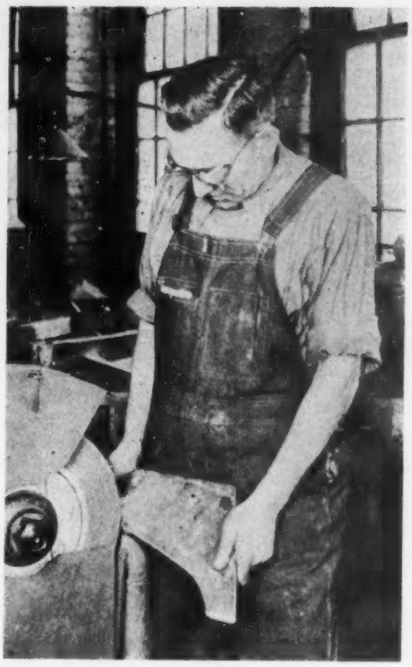


Fig. 2—Plow-point grinding. Front edge must be ground sharp to cut the soil freely

must be exercised in setting them up with the abrasive.

Final finishing operation consists of painting. Parts such as beams, handles, etc., are finished by dipping. Air hoists are provided so fatigue in handling the parts is reduced to a minimum. Parts first are hung on hooks, then dipped in tanks, the tops of which are level with the floor, removed and run aside on overhead trolleys to dry. In general these parts receive a flat color, followed by dipping in varnish.

Plow Points Finished on Conveyor

A somewhat unusual method is followed in finishing plow points to be used for repair purposes. The points are loaded on hooks on conveyor chains which travel through a battery of spray nozzles. Aluminum paint is used. Superfluous material runs back into the supply tank where it is pumped back to the spray nozzles. By the time the parts reach the back of the machine they are dry. Here they unload automatically and fall into a chute which discharges them on an apron made of conveyor chains. As each part is discharged, it is stenciled in red paint with the company's name, part number and designation.

Finish Adds to Sales Appeal

It costs about as much to finish a plow as it does to make it. However, a good finish is necessary for sales appeal as well as for correct plowing action. Place an inferior plow, highly finished and an unfinished high-grade plow before the average farmer and in nine cases out of ten, price being the same, he picks the inferior article. Thus the average person, even the hard working farmer, demands beauty, although this fact is not always admitted readily.

Wrinkle Finish Resin

■ New Wrinkle Inc., Dayton, Ohio, licensors of Wrinkle finishes, has recently been granted a United States patent covering the manufacture of a resin to further augment the advantages of these finishes. The patent number is 2,154,954.

The manufacture of the resin and wrinkling varnish from which it is made is somewhat unique. The resin belongs in the class of a phenol modified, oil extended alkyd, but is different in that a phenolic varnish base is made first, which is afterward converted into an alkyd by the addition of phthalic anhydride.

The resin may then be dissolved in suitable solvents to make the wrinkling varnish or it may be blown with air and afterwards dissolved to make a varnish with a more accentuated wrinkling texture. The unblown resin solution is preferably used as a grinding vehicle for pigmented finishes; the color paste afterwards being thinned with the blown resin solution.

The method involved offers particular advantages in allowing an appreciable length of time to elapse between the spraying and baking operations. Also, with a proper selection of the phenol gum used, the time of baking can be shortened materially and still give an extremely hard, tough wrinkle finish.

Porcelain Enamel

■ A one-coat, one-fire brown porcelain enamel which covers uniformly and completely and has a glossy finish has been developed by Porcelain Enamel & Mfg. Co., Eastern and Pemco avenues, Baltimore. After drying, this coat may be grained in the bisque and fired at one time. It is said to be especially desirable where lighter gage metals are used, as firing temperature is much lower than that ordinarily maintained to obtain a good bond.

Fig. 3. (Upper)—Workman at left is fitting shares. Operator at right is pinning or drifting parts to master forms for inspection. Checking is important as even these odd-shaped pieces must be perfectly interchangeable. Fig. 4. (Lower)—In this surfacing operation, work is located on a cradle which then is passed under the stationary grinding wheel

Open-Hearth Improvements

Estimated savings of $1.023 per ton of ingots may be afforded by increasing refractory yield, eliminating front wall and excessive water cooling at doors, by reducing scrap preparation. Time per heat cut one third by bulk charging

By L. S. LONGENECKER
Interlocking Arch Dept.
Frazier-Simplex, Inc.
Washington, Pa.

■ THE FOUR open-hearth improvements discussed here include a suspended arch, increasing yield of roof refractories and eliminating front wall; a new type door with less exposed water-cooled surface; an auxiliary design of front wall burners; and a bulk-type charger handling entire charge in one operation.

Fig. 1 shows suspended arch construction with tiles interlocked and grouped in bundles. This arch design in silica is being used successfully in adjustable shadow walls and back walls on glass-melting furnaces and is used on 20 open-hearth checker chambers. A unit in basic refractories is in service on a copper reverberatory furnace. Roof height shown is required for present turn over charging of scrap, but roof can be lowered to height of door with proper charging improvements.

With a suspended roof, there is no sprung arch load. Roof and door load can be carried by a girder so entire front of open-hearth furnace can be replaced by a series of doors. Also, roof can be constructed in removable sections; front, middle and back, each a half length of furnace body. Since any section can be replaced with overhead crane, service life of roof refractories should be increased from 40 to 75 per cent. Only the damaged portions need be replaced, the remainder being used for further service. Tiles are individually hung and may remain in place until 9 inches has burned off of the 12-inch thickness. This increased yield is estimated to be $0.03 per ton of ingots, with elimination of front wall at $0.021.

A new truck-operated water-cooled door with a 9-inch thick supported lining employs a mechanism which moves door from the lintel, then carries it up a track without a single sliding contact. Seals close clearance between doors. Flanged truck wheels guide door up and down to prevent contacting adjacent doors. There are no water-cooled edges.

Door tiles are held in place by hanger castings and bonded by split tongues. Door lining serves as edge of door eliminating exposed water-cooled edges, so exposed water cooling is 40 per cent less than with sprung-arch type door frame. Saving in heat is about 1.2 cents per ton of ingots. Where archless type door frames are used, savings will be greater yet.

Abstract from paper presented at Open Hearth and Blast Furnace Conference, Cleveland, April 26, 27, 28, 1939.

TABLE I

Present Length of Heat	12 hours
Length of Heat with Bulk Charging	8 hours
Thus Heat is Reduced	4 hours or 1/3
Assume—	
Fuel Cost	$1.10
Furnace Rebuild	.70
Hourly Labor	.80
Total	$2.60 per ton

Saving then is 1/3 of $2.60 or 87c per ton.

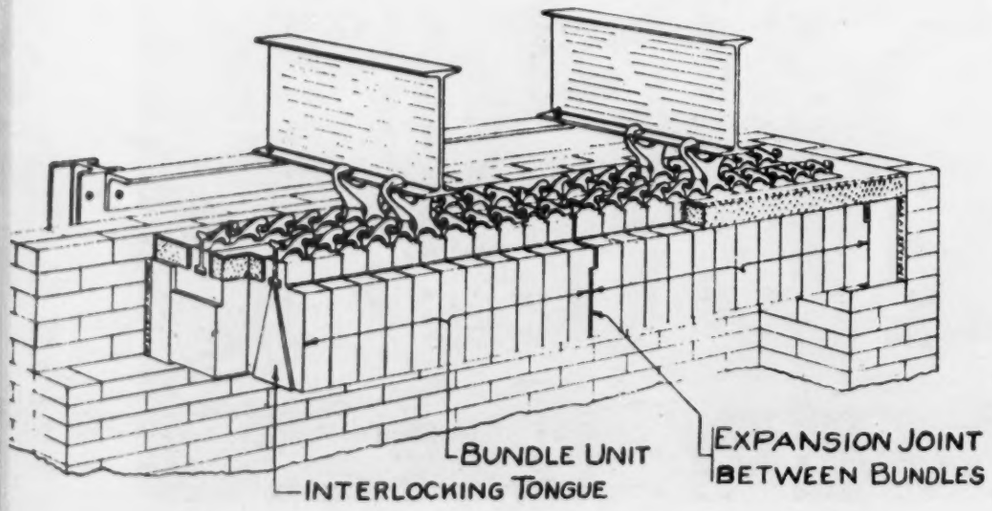


Fig. 1—Perspective view of interlocking suspended arch construction utilized in open hearth roof design discussed here. Tiles are grouped in bundles for easy replacement

Auxiliary Burner Improves Melting

Fig. 2 shows auxiliary portable burner unit in place, designed to produce a typical blowtorch melting-down flame. Plan is to use this melting-down flame in combination with conventional end-port flame which will keep the roof hot and work the scrap from the top while

You use oil tempered wire only when hard usage of a wire product or the need for a wire part of the smallest possible dimension justifies the additional cost of wire with a high elastic limit. But when you need it, you need the best . . . and you get the best in Wissco Oil Tempered Wire. Wissco Wire itself is a wire of the highest quality. Oil Tempering in the Wickwire Spencer mills is based on an accurately controlled temperature cycle for heating and tempering. Let your next order for Oil Tempered Wire be Wissco. You will then be assured of uniformity and quality to make the best wire products . . . at the lowest cost. Wissco Oil Tempered Wire costs no more.

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Wickwire Spencer manufactures High and Low Carbon Wires—in various tempers, grades and finishes—for your specific purpose. Hard-Drawn, soft or annealed Basic or Bessemer Wires—Hard-Drawn annealed, or oil-tempered Spring Wire, Chrome Vanadium Spring Wire—Valve Spring—Music—Clip—Pin—Hairpin—Hook and Eye—Broom—Stapling—Bookbinding—Dent Spacer Wire—Reed Wire—Clock—Pinion—Needle-Bar—Screw Stock—Armature Binding—Brush—Card—Florist—Mattress—Shaped—Rope—Welding. Flat Wire and Strip Steel, High or Low Carbon—Hard, annealed or tempered—Clock Spring Steel—Corrosion and Heat Resisting Wires. Consult the Wissco technical man on your wire problems, however large or small.

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TABLE II

	Dipper Charging	Bulk Charging
Charging Time	1 hour	2 min.
Heat Required to Bring Charge to 2900° F. (940,000 B.t.u. per ton ingot)	103.4	103.4
Heat in Furnace Body After Tapping (2950° F.—2500 sq. ft.—130 lbs. per sq. ft.)	153.6	153.6
Furnace Temperature After Charging	1800°F.	2900°F.
Heat in Furnace Body After Charging	96.5	151.7
Furnace Body Heat Lost During Charging	57.1	1.9
Heat Required to Bring Furnace Body Back to 2950° F.	57.1	1.9
Heat Required by Charge and Furnace Body	160.5	105.3
Total Required Fuel Input	550.0	363.1
Time Required per Heat, Hours (Fuel rate 46,000,000 B.t.u. per hour)	12	7.9
Saving in Hours, (the difference in time) of Furnace Operation Afforded by Conserving Heat		4.1

Note: Furnace rating is 110 tons. Heat and fuel requirements are given in millions of B.t.u. All values are assumed or estimated.

Conditions:

Charge	Practice	Wt. Lbs.	Temperature, Deg. Fahr.
Scrap (Heavy)	40%	98,000	900—"End of Charging Period"
Hot Metal	60%	162,000	2300—"When Charged"
Ore		40,000	900—"End of Charging Period"
Lime		16,000	900—"End of Charging Period"

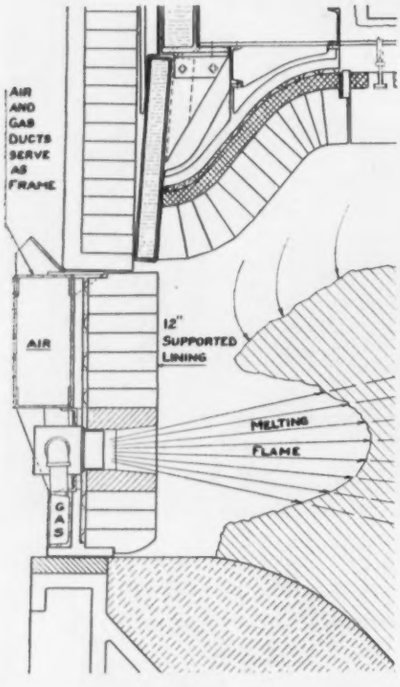

Fig. 2—Auxiliary portable burner unit designed to give improved melting. Speed of melting should be increased with these units

flame from the front-wall burners will work side and bottom.

With melting burners fired under end-port flame, roof will be protected from high-velocity melting flame.

It is expected the front-wall burners will produce a result equivalent to underfiring, which in itself will produce faster melting. In addition, these burners will work scrap from front side which is now fairly cool because of air infiltration and water cooling around the doors.

Due to the more efficient type of melting flame, its position and ability to heat front and bottom surfaces, speed of melting undoubtedly will be increased. No attempt is made to estimate how much, this item being allowed to ride along as a factor of safety to cover other estimates.

Fig. 3 shows a telescoping type bulk charger, composed of sections which are loaded in the stock yard; then coupled together and run into the furnace and discharged as a unit, when all doors are opened, simultaneously the full length of furnace. This permits charging scrap in one operation. Scrap rests on bottom plates which slide back under each other thus laying the charge in the furnace as they disappear. The sliding friction between bottom and scrap is limited to one plate at a time.

Fig. 3—Side view of charger unit in furnace. Bulk charger is composed of a number of sections of this type. Sections are loaded individually in the stock yard, then coupled together and run into the furnace as a unit, furnace doors being opened simultaneously the full length of furnace

Charging by this method is estimated to reduce cost of scrap preparation about 9c per ton of ingot on a 40 per cent practice. Also, it permits the use of lighter scrap on a more economical basis.

This bulk charging practically eliminates charging time by reducing it from present 60 minutes to an assumed 2 minutes. Table II shows how this fast charging will conserve the heat stored in the furnace body and thereby shorten total melting time. Any heat storage lost during charging must be replaced after charging and so becomes a heat requirement just as much as heat for melting.

Do not confuse this heat with heat lost by conduction through refractories which goes on regardless of whether doors are open or closed. Loss of heat storage results when fuel supply is not sufficient to hold inside furnace temperature at a given point. Such loss occurs when fuel rate is reduced, when furnace doors are open, and also when auxiliary cold working tools absorb heat, as in charging. Usually conduction and heat storage losses are grouped together and called radiation losses.

TABLE III—SUMMARY

Estimated Savings

Increased Refractory Yield With Suspended Roof	$0.030
Eliminating Front Wall	0.021
Less Water Cooling at Doors	0.012
Less Scrap Preparation	0.090
Four Hours Shorter Heat	0.870
Total Saving per ton of Ingots	$1.023

It has proven difficult to secure any information on inside wall and scrap temperatures after charging, here assumed as 1800 and 900 degrees Fahr. respectively. Based on these estimated values it appears as though so-called radiation losses are

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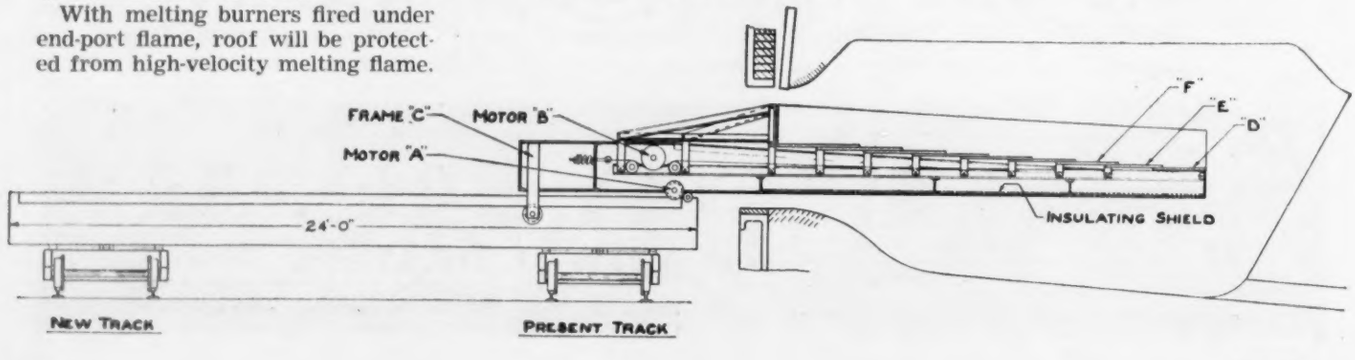
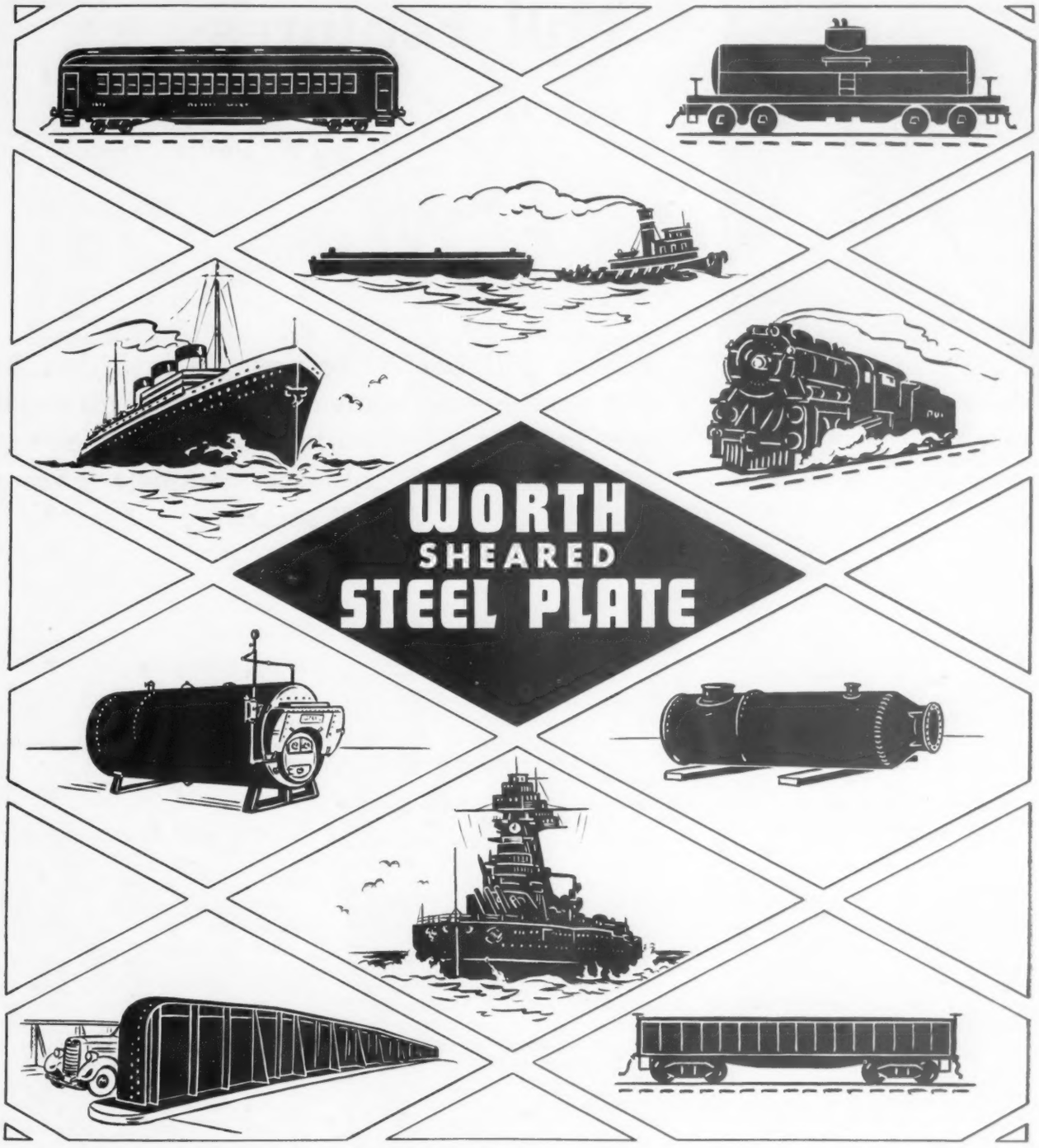


Whenever **QUALITY** is the prime requirement . . .



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WORTH STEEL COMPANY

CLAYMONT, DELAWARE

Should blooming mill facilities prove a bottleneck, this breakdown mill is heavy enough to take over the work

Mill Features *Bypasses*

Reborn mill has many unusual facilities. Bypasses eliminate bottlenecks. Structural stands replaceable as complete units with enough extra units available for complete change of all stands

■ CONTINUOUS operations, insured by installing "bypasses" around the principal bottlenecks, make the capacity of Weirton Steel Co.'s new structural mill greater than most other mills of this type.

This new mill, located in the Weirton, W. Va., plant of the company, subsidiary of National Steel Corp., is in reality a reborn unit. Supplanting a small structural mill, the new setup has been enlarged and rebuilt, augmented by considerable new equipment and is prepared to roll a wide range of structural products. Among these are wide-flange beams up to 24 inches depth, all gages of sheet and Zee piling, as well as a complete range of H-beams, I-beams, angles, channels, Tees, bulb angles and special sections. The mill is equipped to handle 50,000 tons of products per month.

Probably the most interesting feature of the mill is the flexibility of the structural stands themselves. There are three of these, set in a line and connected in such manner that either or both of two motors, set on opposite sides of the stands can operate the mills together or separately.

Also, instead of changing rolls, the mill stands themselves are removable should the products to be rolled require it, thus saving considerable time and correspondingly increasing mill capacity.

Ingots from the soaking pits pass through a 40-inch blooming mill, which supplies billets, blooms and slabs for the entire steelworks. From the 40-inch mill, blooms for the structural mill cross a transfer to a hot shear, where they are cropped to the desired length. Crossing another transfer to a rolling table car, the blooms are carried to a roll train leading into the reheating furnace.

The gravity-feed reheating furnace is equipped for either gas or oil firing and is of the triple-fired type. Although there is only one reheating furnace now in operation, plans call for three such units eventually, and provisions have been made for them.

First Bypass a Blooming Mill

Blooms, reheated to 2250 degrees Fahr., drop on the lower furnace table and are carried to the 35-inch breakdown mill. This mill represents the first "bypass," since it is in reality a large blooming mill and in case of emergency or breakdown at the 40-inch blooming mill, or when the demand for steel is too heavy at the 40-inch mill, ingots can be carried directly from the soaking pits by means of a buggy on a track to the end of the 35-inch mill table, where the blooming operation may take place.

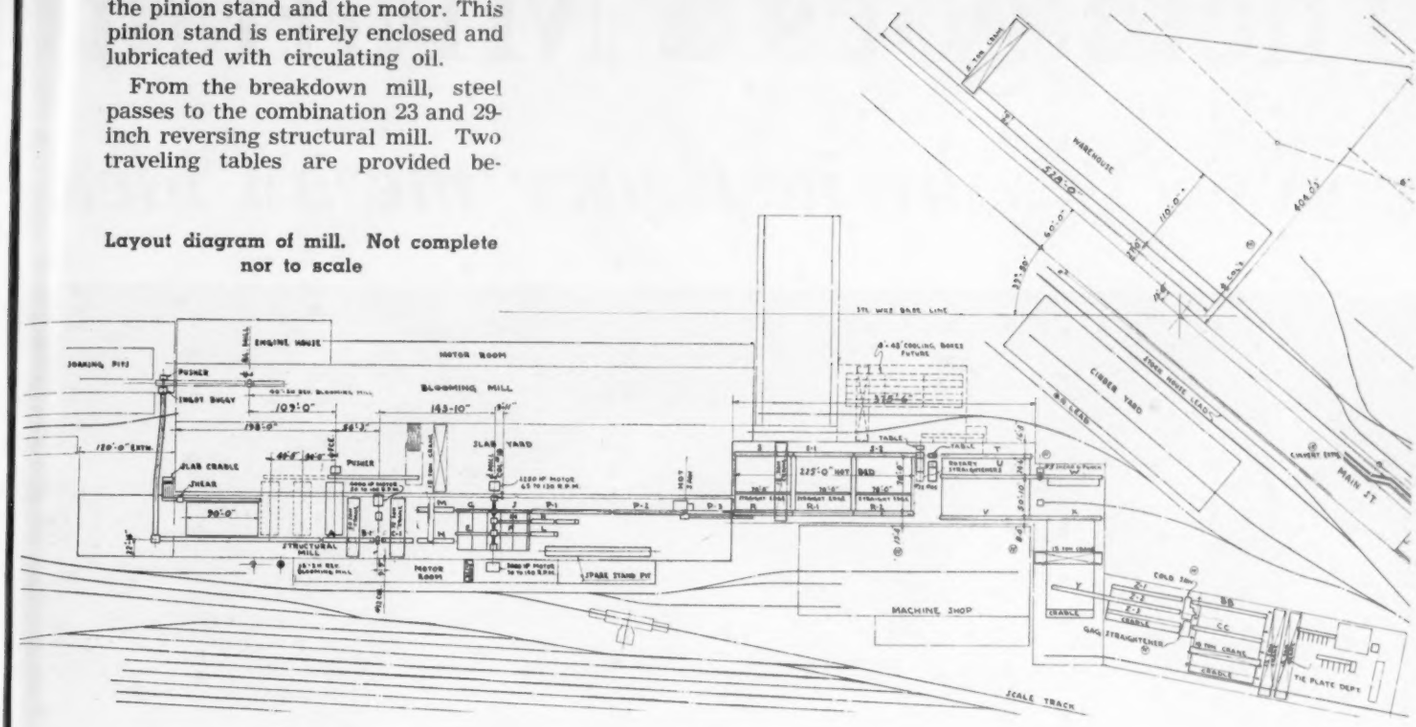
The 35-inch unit is a 2-high mill with counterweighted top-roll balance. Driving mechanism is located on the pinion stand side with electrically operated manipulators on both sides of the mill. It has water lubricated roll bearings and hydraulic (oil) spindle balances. A universal spindle is installed between

Transfer car with power driven rolls supporting steel during transfer of billets from shear line to reheating furnace entry line

the pinion stand and the motor. This pinion stand is entirely enclosed and lubricated with circulating oil.

From the breakdown mill, steel passes to the combination 23 and 29-inch reversing structural mill. Two traveling tables are provided between the breakdown mill table and the structural mill, arranged to serve two tilting tables on the entry side of the structural mill.

Layout diagram of mill. Not complete nor to scale



Four traveling tilting tables and one movable nontilting table service the three structural mill stands. A chain transfer with necessary tables and chutes is provided on the delivery side of the mill behind two traveling tilting tables.

Power Combinations Used

The combination 23 and 29-inch structural mill is designed so several power combinations can be used. One arrangement includes three stands of 23-inch mill and a pinion stand, driven by the 3000-horsepower motor. On heavier sections, however, the one motor may not provide enough power to run all stands. Then the primary and intermediate stands only are driven by the 3000-horsepower motor and the finishing unit is operated by a 2250-horsepower motor located at the opposite side of the stands. This is particularly true when the 29-inch stands are being used. On extremely heavy work it often is desirable to install a spindle between the intermediate and finishing stands to utilize the total power of both motors for any one pass.

This made possible by synchronizing the two motors electrically to maintain proper loads and speeds. When rolling wide-flange beam sections, the regular 2-high finishing stand is replaced with a 2-high universal stand, driven by the 2250-horsepower motor. The train is designed so a spindle between the universal and intermediate stands may be installed if necessary to utilize more power.

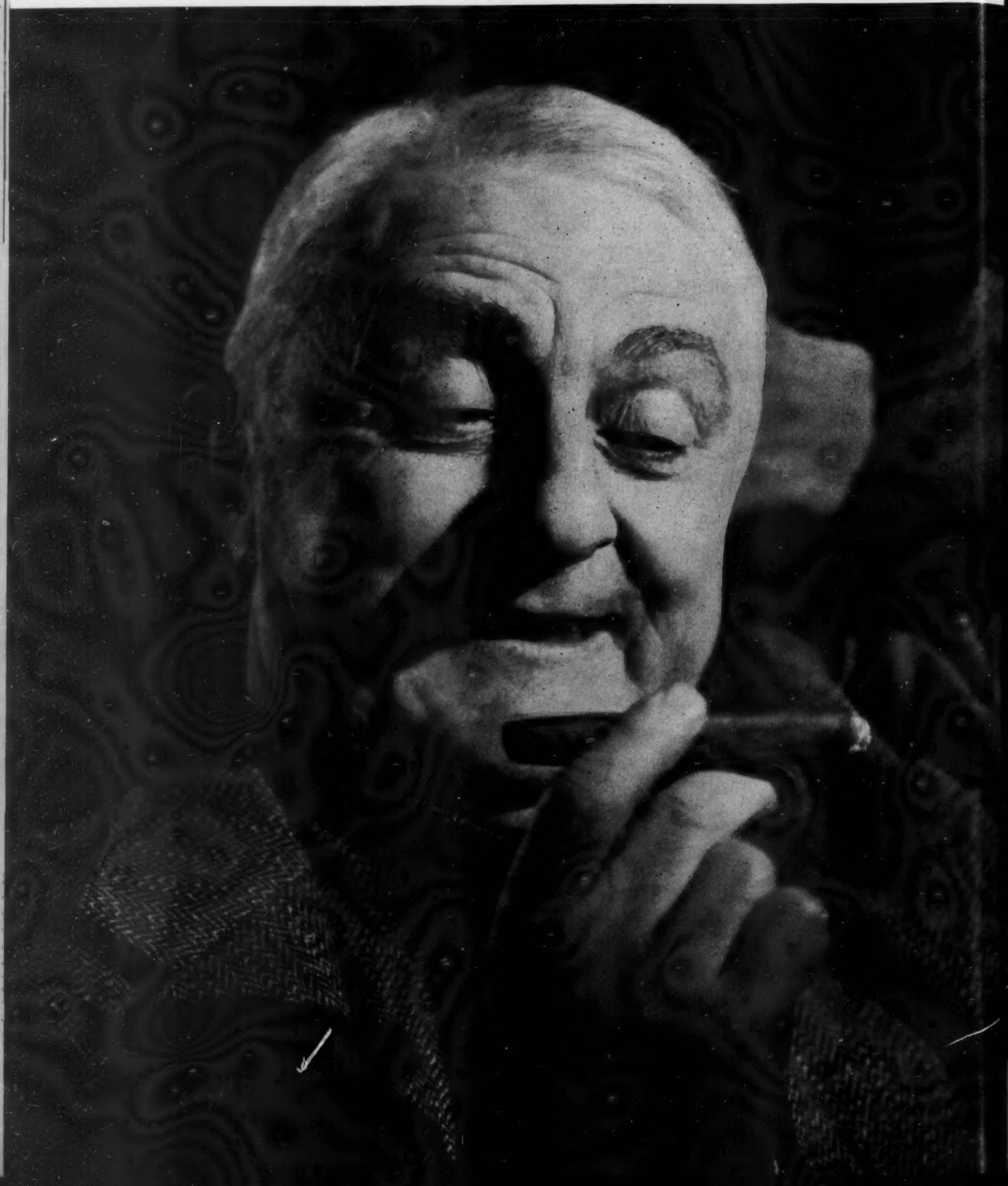
In order to save considerable time and eliminate a possible bottleneck, a second bypass is incorporated. Roll changes on these mills are not made on the stands while in operating position. All changes are made on spare stands in pits, which eliminates shutting down the mill for changes. Thus instead of several hours, only minutes are consumed in removing a complete roll stand, carrying it on a 75-ton crane to the spare stand pit, and replacing a spare stand on which the desired

(*Please turn to Page* 71)

Finishing mill on left, first two reversing structural mills on right, control pulpit on top. Stands of these 23-inch mills are removed in entirety and spare stands set in when roll changes are required

"There goes a MIGHTY

he just gave me an idea



SMART Salesman . . .

that'll save us thousands of dollars"

"For years we have been using a complicated heat-treating practice on our motor parts. Today Jones walks in and shows me how, by using U·S·S Controlled Steels, we can simplify our heat treatment to get results as good or better—and with *no added cost of steel.* That's what I call smart steel selling."

AS a matter of fact, Jones is not a salesman. He couldn't take a steel order if you gave it to him. He's one of our metallurgical contact men.

The only thing he has to "sell" is information, and that costs you exactly nothing.

His job is to show steel users how to use steel more effectively—how to select steel on the basis of what it must do in service—and how to better fit steel to the fabricating equipment available.

Sometimes his recommendations to you actually mean smaller steel orders for us. But we believe they also mean increased customer goodwill — and more steel business in the long run.

Jones, and the men like him can give you thoroughly unbiased advice as regards steel, simply because they have the *entire range* of metallurgy's finest steels from which to choose. In working on your problems they can call upon the facilities of the most completely equipped research laboratories and the finest steel-making plants in America. The accumulated knowledge and experience of 81 years of steel making back them up.

If you want this kind of money-saving cooperation—if you value the practical assistance of expert steel technicians who are trained to look at steel problems through the eyes of the steel *user,* call us in.

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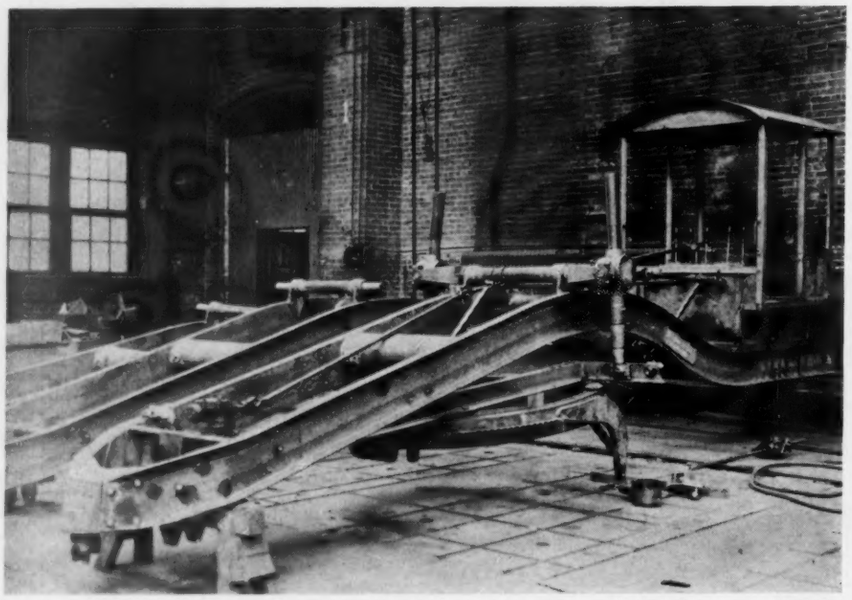
Pittsburgh and Chicago

Columbia Steel Company, San Francisco, *Pacific Coast Distributors*
United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL

Road Graders

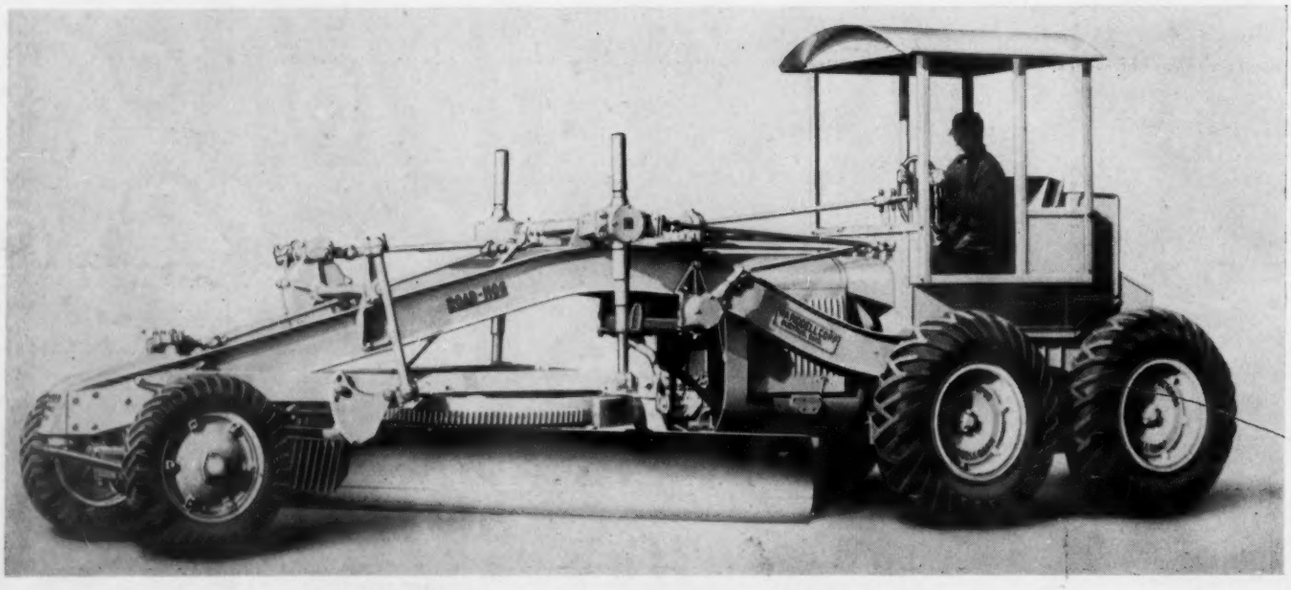
Construction of heavy duty road building equipment is greatly facilitated by use of standard rolled steel plates and shapes, bulldozed to form required and joined by arc welding. Large loads at front yoke easily handled by welded assembly



■ MANUFACTURE of road graders, rollers and other heavy road-building equipment at plant of W. A. Riddell Corp., Bucyrus, O., largely follows the trend of fabricating such equipment from standard plates and shapes which are formed and assembled by welding.

Frames for these heavy machines are made from standard I-beams and U-sections. High-carbon steel is used for frames and heavy-duty parts with low-carbon steel for cab framework and miscellaneous structures. Side sections of road grader frames shown in Fig. 1 are made

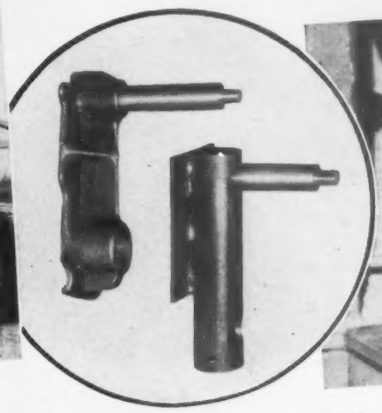
Fig. 1—Frame assembled and cab, blade circle, etc. being mounted. Fig. 2. (Below)—Completed unit with scarifier, blade and power controls. Photos courtesy General Electric Co., Schenectady, N. Y.



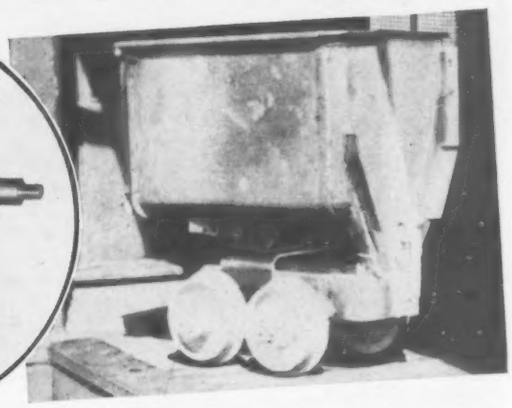
GET AHEAD WITH WELDING

Be the man who gets credit for economies and improvements like these

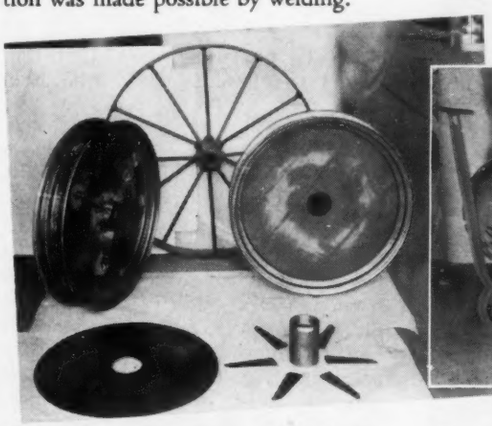
You can gain recognition for advancement by using welded steel for developing machines that would be impractical or uneconomical to build by other methods. Example: This all-welded sugar cane harvester, designed and built by R. G. Le Tourneau, Inc., Peoria, Ill., for lowering harvesting costs. Its construction was made possible by welding.



Change over one part at a time to welded steel construction. Example: A bearing for a cement buggy. Former construction, shown on the left, weighed 12 lbs. Welded steel bearing, shown on the right, eliminates five drilling operations and one slotting operation. It weighs 8¼ lbs. and is unbreakable.



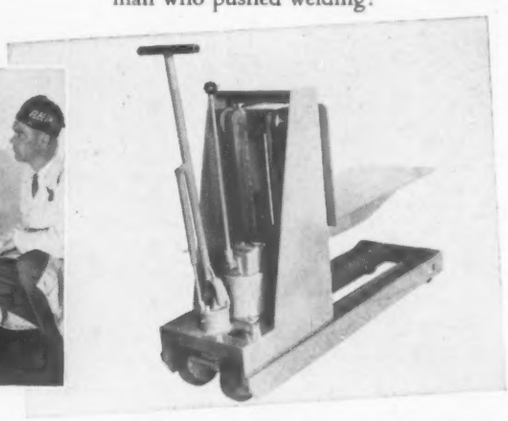
Welding saves weight, reducing operating cost of materials handling equipment such as this copper ore car. Formerly riveted, it weighed 1300 lbs. Built with 5/32" high-tensile steel plate—welded with *"Shield-Arc 85"* Electrode—the car weighs only 700 lbs.—600 lbs. less to pull around! That's headway for the man who pushed welding!



You have exceptional engineering freedom in designing for welding because you have your choice of scores of different shapes and types of steel. Example: A wheel for a cement buggy, built from pressed steel rim, plate disc and stiffeners and pipe hub. Former design is shown in the background. Photos of wheel and bearing (above) courtesy Red Star Products Co., Cleveland, Ohio.

For widest welding range and lowest welding costs, see that your shop is equipped with Lincoln Welders. Both *"Shield-Arc"* (left) and *"Shield-Arc Junior"* (right) have exclusive Self-Indicating "Job Selector" and Current Control for maximum speed and quality on every job.

For further details, consult the nearest office or mail the coupon



Increased sales appeal can be secured by streamlining machines with welded design. This neat-appearing lift-truck is of practically 100% welded steel construction using bars, plate and angle. With welded design, a wide range of types and capacities can be produced at minimum cost, without delay. Photo courtesy Lyon Iron Works, Greene, N. Y.

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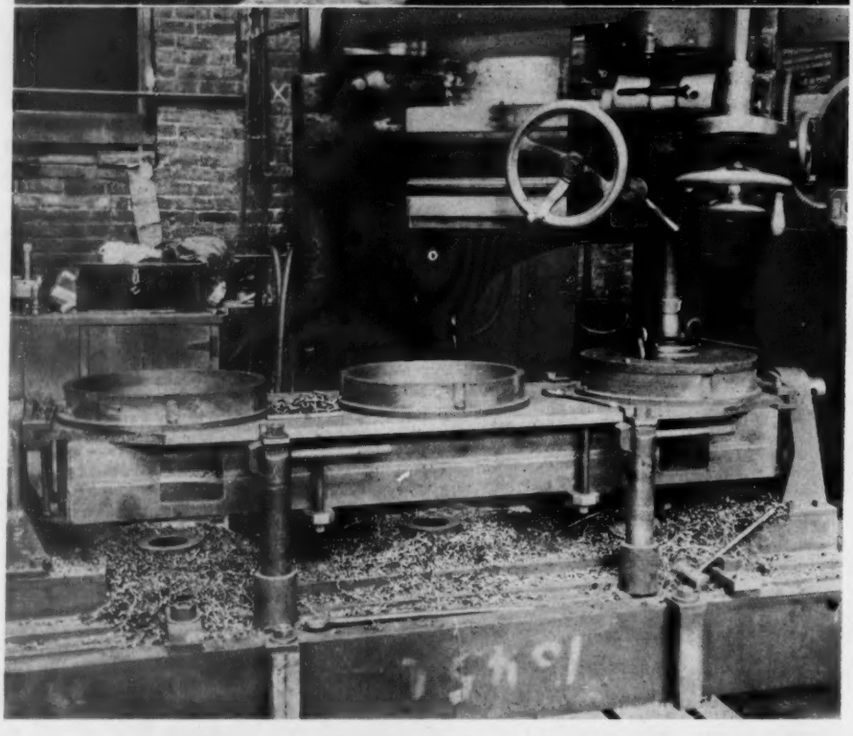


by heating a U-channel to forging temperature and bulldozing in a large machine to the shape wanted. In assembling the frame, it is stiffened by welding two large-diameter high-carbon sections of seamless steel pipe between the side pieces, forming an extremely strong and rigid construction as shown in Fig. 1. Members for frame and other portions of graders are cut using either a heavy shear or an oxy-acetylene torch.

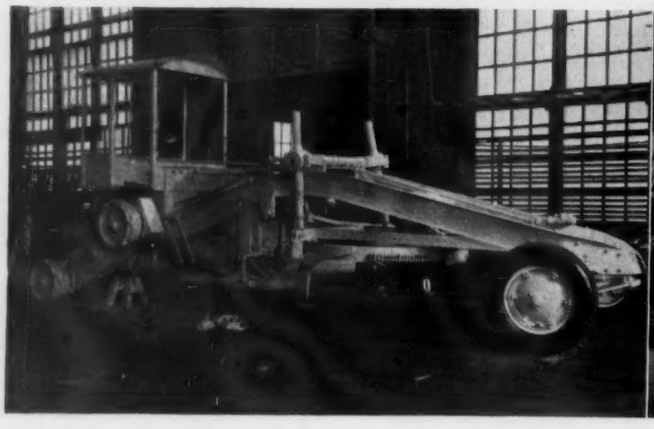
Entire Cab Arc Welded

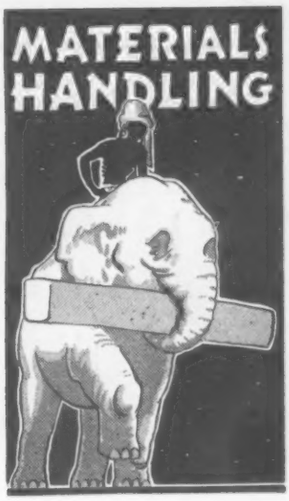
Cabs employ 2 x 2¼-inch angle framework with lower plates of ¼ or 3/16-inch material. Roof is 16-gage sheet. Entire unit is assembled by arc welding.

Those machines employing endless caterpillar treads have the crawler shoes or tread units made from 0.75 per cent carbon steel. These are sheared or torch cut from plate, heated to a red heat and shaped in dies. Those machines employing 4-wheel drive with large rubber tires, as shown in Fig. 2, have a tandem drive housing on each side. In these housings are two chain drives—one to each of the wheels from the center drive shaft connected to the engine. This housing is made from 18-inch channels torch-cut to length with three 13½-inch holes flame cut in the side into which the bearing mountings are bolted. After holes have been cut in the housings, the latter are straightened, the edges machine beveled and two U-sections joined together to make the hous-

(*Please turn to Page* 74)

Fig. 3 (Top left)—Closeup of front cross brace assembly where ball-and-socket joint transfers full power of engine to cutting blade of grader. Fig. 4. (Center left)—Tandem drive housing being machined in special jig boring layout. Fig. 5. (Bottom left)—Note tandem drive housing at left before wheels are mounted. Fig. 6. (Bottom right)—This unusual unit has engine mounted above transmission instead of in front as in Figs. 2 and 5





Container Plant

Even with poor building layout, processing is planned to handle efficiently an extremely wide variety of items in huge quantities. Elevators, conveyors and special handling equipment handle complicated flow of materials

■ METHODS employed by Heekin Can Co., Cincinnati, in manufacturing containers from tin plate and black plate are interesting from a materials handling point of view because of the tremendous production accommodated in an old building which was not designed particularly for such operations.

This company has two large container plants, one at Norwood, O., and the other in Cincinnati. The Norwood plant makes containers for food products, whereas the Cincinnati plant, corner of New and Culvert streets, includes complete processing of an extremely large variety of other containers, ranging in size from one inch to sixteen inches in diameter. This wide variety entails wide range in type and size of processing machines and necessitates a stock of over 200 different sizes of tin plate and 100 sizes of black plate which is stored in the basement.

Sheets Come on Wood Skids

This material is received in units of 1120 sheets being cased and steel strapped on a wood skid to facilitate handling. Tin plate and black plate are used in about equal proportions.

Plate is shipped down the Ohio River from producing plants near Weirton, W. Va., and unloaded from barges at the company's Ohio River dock, designed and used exclusively for transferring tin and black plate to Heekin plants.

This river dock is an interesting example of handling because the warehouse itself is located on a high bank overlooking the river. Material is unloaded from barges on the river by means of a monorail system extending from the warehouse out over the river and supported by two legs resting on piers in the river. Bundles are lifted from the barge to height of warehouse and carried into the warehouse where they are reloaded by fork trucks into freight cars, these in turn being switched to a siding at the plant.

Here an electric truck is used in unloading the box cars which are spotted on a siding alongside the plant at basement level. Sheets are taken directly to storage areas in basement. Tin plate after being steel strapped in boxes on skids, is given a second overall casing of heavy cardboard as an additional protection. With tiering fork trucks, sheet packs can be stacked to a height of about 6 feet, permitting storage of about 2500 tons. With some 300 different sizes of material to be stocked, this quantity is necessary to maintain adequate supply of raw material.

Storage operations are greatly facilitated by fork-type electric trucks which handle the sheet packs easily since each individual pack is steel strapped to a skid.

Since from 20,000 to 25,000 tons of steel are handled in and out of storage during a year, operations are planned so minimum amount of rehandling is necessary. A carefully worked out system of storage areas and aisleways permits maximum accessibility of all parts of the storage area. This eliminates necessity of restacking material to reach material of a different size stored behind it.

Power Plant in Basement

Power plant, also located in the basement, employs an interesting application of materials handling equipment for handling coal. This plant generates all its own power, employing three 300-kilowatt direct-current 250-volt generators. Power

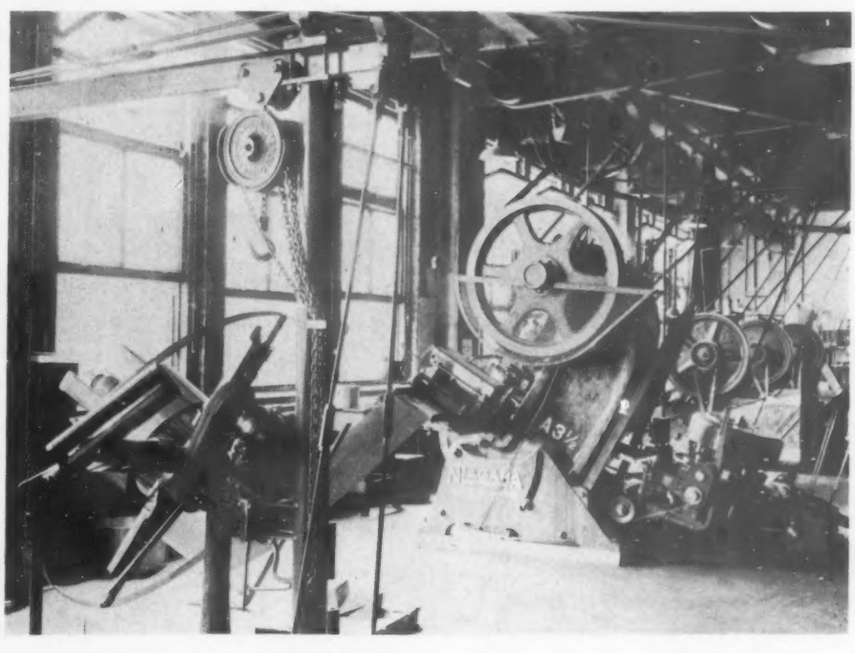


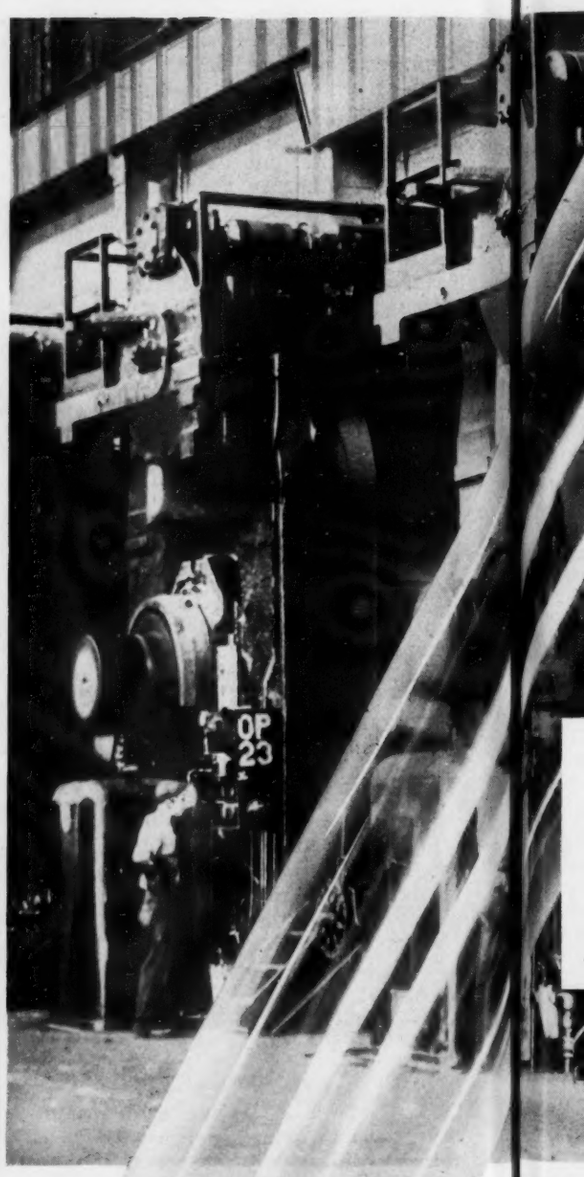
Fig. 1—Special blanking and forming press setup fed with steel strip from reel at left makes 5500 container bottoms without stopping

ROLLING ON THE Right

HELPS MODERN STRIP MILLS SAV

Modern continuous strip mills place a direct responsibility on the film of oil that protects roll-neck bearings. To help prevent bearing failure and possible shutdown, that oil film must stand up!

Gargoyle D.T.E. Oils meet this responsibility with a film built to withstand heavy pressure. These oils assure safe, positive protection...with oil economy.



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The right lubricant for every machine . . . and new lubricants ahead of new needs . . . developed by world-famous research laboratories through close cooperation with machine builders.

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World-wide distribution and guaranteed uniformity—the same quality available everywhere.

Oil Film..

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to drive these is obtained from three steam boilers, rated 275-horsepower run two at a time with the third as a standby unit. These boilers are stoker fired, the coal coming from overhead hoppers.

Coal is received at the plant in bottom-dumping cars which discharge to a bin underneath the tracks where a Redler type coal conveyor is employed to take the coal out from the bin, raise it and discharge it to the hoppers above the stokers in front of each boiler. This conveyor has been found highly advantageous for this service as it handles the coal without breaking or chipping. Also, since the conveyor operates in a dust-tight tube, there is no dust or dirt discharged into the atmosphere. This permits the boiler room to be kept spotlessly clean without much effort, makes a better place for the men to work and contributes to better operation of the electrical equipment.

This type of conveyor transfers material in any direction through closed chutes by means of a removable link-type conveying element. These conveying elements or skeleton flights push the material through the chute, around corners and carry it vertically as well as horizontally in any direction desired.

Returning to the steel, all plant departments are arranged to take as much advantage as possible of a single line flow of material without backtracking. This is somewhat difficult in this particular building since it originally was built for can-making operations on a much smaller scale.

Building is irregular in shape, somewhat resembling a wedge, being about 280 feet on each of the long sides, 150 feet on the narrow end of the wedge and about 200 feet on the large end of the wedge. Building consists of six floors and a basement and has a court extending down to second floor.

Material starts from storage in the basement, goes to top of building and is processed as it moves down to the first floor where it is shipped. Sixth floor is devoted to art department, photo engraving plant and lithographing work. In addition to complete facilities on this floor for making photo engravings required in lithographing, equipment includes flat bed and high-speed rotary lithographing presses. Each press feeds directly into an automatically controlled gas-fired drying oven of the automatic-feed continuous type. These tunnel-type ovens vary from 20 to 90 feet in length and employ temperatures from 150 to 350 degrees Fahr. according to work being handled.

The high-speed rotary lithographic press handles a maximum size sheet, 28 by 38 inches. Seventy-five sheets per minute is output of this unit which feeds directly into a 90-foot tunnel-type oven. This oven and other long units employ two-zone control. All are the recirculating type. Coating machines have automatic feeds and some of the lithographing presses also are fed automatically.

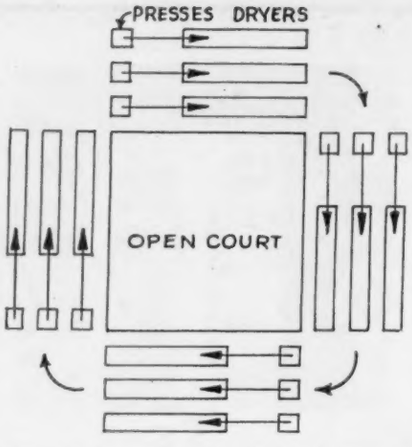
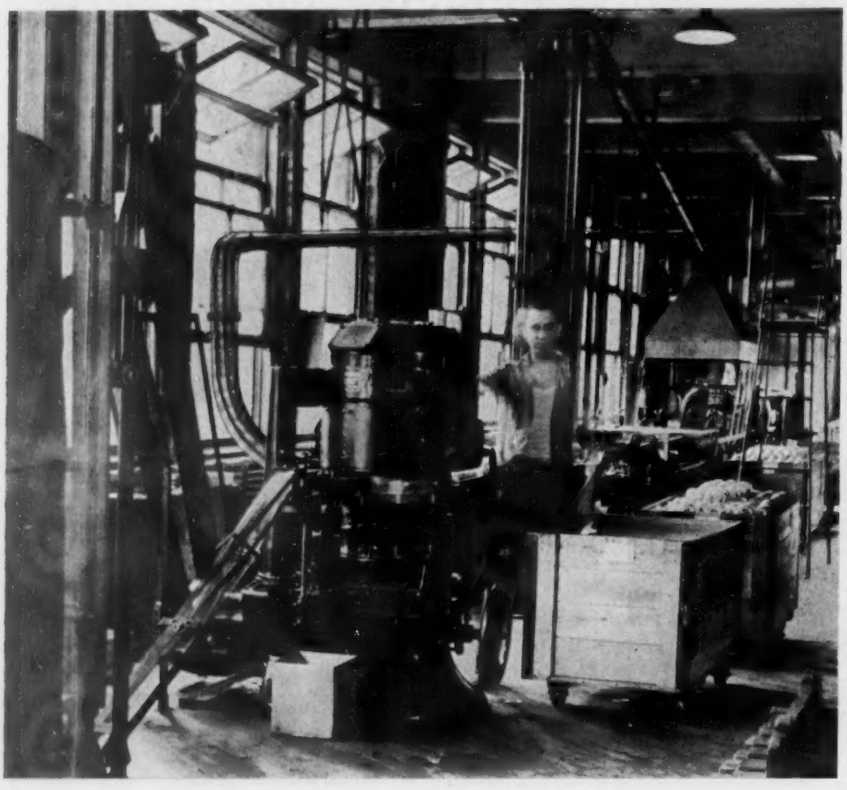


Fig. 3—Arrangement of high speed presses and dryers in circle around court on third floor level facilitates volume production with minimum handling

Fig. 2—Automatic container assembly line utilizes skeleton tubes for feeding parts from one machine to next for continuous series of operations



Sheets Go to Top Floor

Most sheets come directly from storage in the basement to the fifth or sixth floors to receive ground coat which covers the entire surface of the sheet. Then subsequent patterns are printed over this in various colors to give the final design. Sometimes as many as 15 impressions are necessary to give the number of colors and final design required. The average is three or four impressions. All inks and coatings used are formulated in this department to permit exact matching of colors. Pebble mills and high-speed grinders are employed here.

Sheets in the storage basement are loaded into one of six elevators servicing the building. All sheets are handled on skids using lift trucks to transfer them about the plant.

After being lithographed, sheets go to the fifth floor where a number of slitters and trimmers cut them into sizes required for individual containers. From four to a hundred containers may be made from one sheet, depending on container size. Lithographing is done in multiple with the pattern repeated on the sheet as many times as necessary.

On the fourth floor, numerous slitters also aid in separating the printed sheets into small units. Sheet may be cut in from 2 to 16 strips. Also on the fourth floor is the punch press department where a large number of automatic high speed presses are employed as well as many other types.

Container tops and bottoms are

ADVERTISING PAGES REMOVED

formed in one operation in most cases. However, a second forming operation is necessary on certain types where shape may not permit adequate die clearance.

Fig. 1 shows one of latest type units employing coiled strip. This press makes 10-inch diameter bottoms for containers at a rate of 75 per minute. Material is fed automatically to the press from a 2000-pound coil shown at the left in Fig. 1. This material is 0.011-inch in thickness. The 2000-pound coil makes 5500 container bottoms without stopping the press or changing the setup.

Press Is Synchronized

In addition to blanking out the circular bottoms, this press is connected directly to a machine which curls the edge of the container bottom, preparing it for seaming into the container. Press is synchronized to feed directly into the curling machine which stacks the curled bottoms in a pile ready for transfer to the next operation. Coils of strip steel are loaded on reel by a jib crane seen in Fig. 1.

Since one carload of sheets makes many carloads of containers, it is impractical to fabricate containers completely at one time and store in the plant until orders for shipment are released. Thus, units for containers are lithographed, stamped and the three units making up the container—top, bottom and side—placed in semifinished storage on the third floor until desired for assembly. Formed container tops and bottoms are stored in large wooden boxes fitted with casters for moving about the plant. Material is loaded directly into these at the presses, and taken to storage area on third floor where a special elevator or tiering machine is employed to place them in storage. Storage racks, Fig. 4, contain space for four tiers of boxes. This permits storage of large volume of semifinished product in comparatively small space. Tiering machine in each aisleway runs on steel rails set in the floor.

Spiral-Type Conveyor Used

On the fourth floor, there are several assembly lines making wire-handled pails, such as used to ship lard and similar products. Larger sizes are designed to be telescoped in stacks to take up a minimum amount of space during shipment. Others are packed directly into cartons. To transfer these from the fourth floor to the shipping department on the first floor, a spiral-type gravity-feed roller conveyor is employed. This affords a quick transfer of material to the shipping department without tying up any of the elevators.

On the third floor there also is a special high-production lithographing setup employed to handle one particular type of container for which there is a continual and large demand. This lithographing work is separated from other lithographing on the fifth and sixth floors to permit most efficient arrangement of lithographing machines, drying ovens, conveyors, etc.

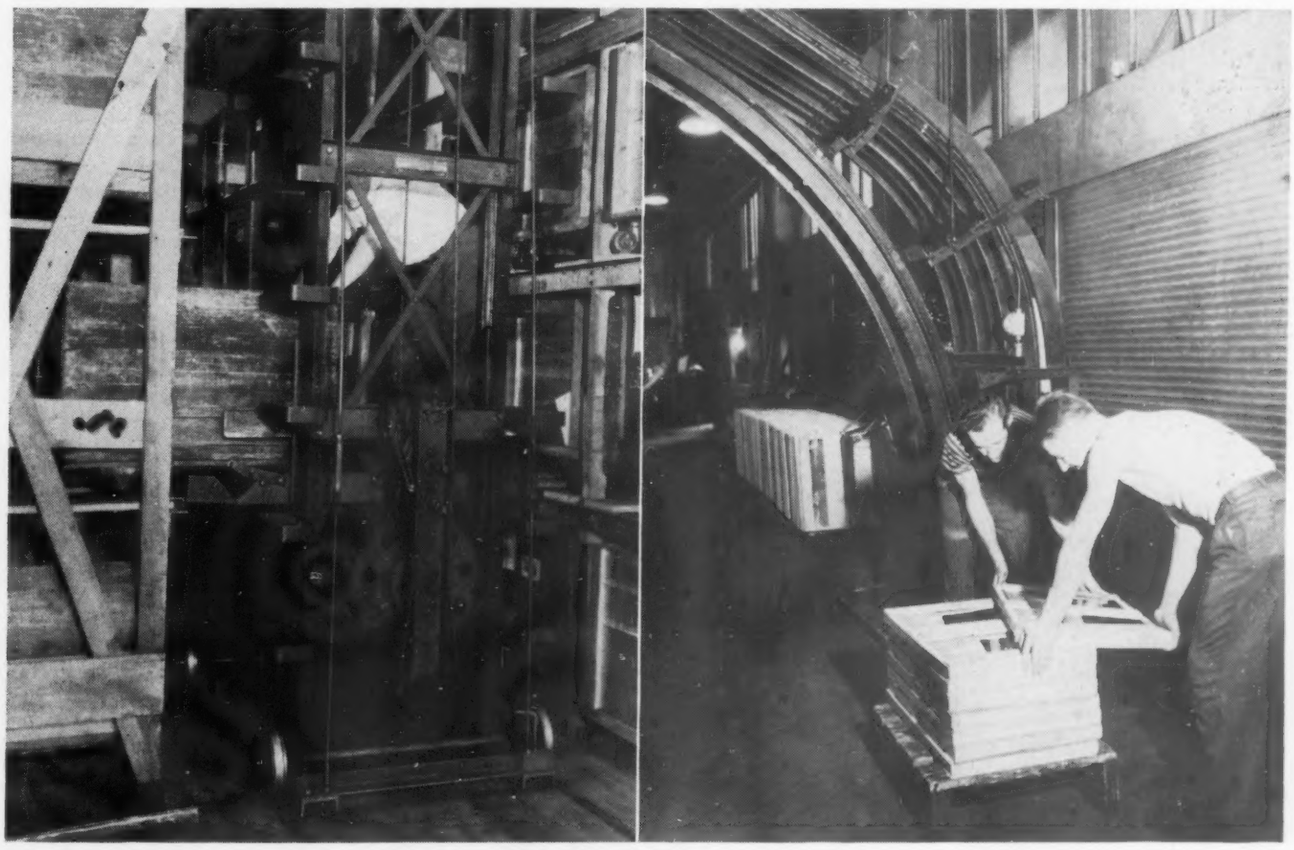
As shown in Fig. 3, equipment is arranged to follow a circular path around the court which extends down past this floor. After sheets are given a ground coating in coater units on the fifth floor, they are sent to the third floor where they enter the high-production line. The first series of presses and continuous dryers at the east end of the arrangement consists of three lithographing presses feeding into drying ovens. These units put on the first color coat required on certain areas of the sheet. Output from these units is fed directly into other lithographing presses and dryers along the south side of the court which print on the second color pattern.

From here, sheets go directly to

(*Please turn to Page* 73)

Fig. 4.—A large quantity of semifinished parts are stored four high in large containers by a tiering machine as shown here

Fig. 5—Special conveyor delivers packages on edge at shipping floor. After being placed on skid, they are stored again on edge



Enlarges Open Hearth

(*Continued from Page* 41)

for the burner is 3 feet, 9 inches in thickness.

To provide sufficient checker capacity, the divided chamber construction used in the old furnaces was discarded and a single chamber used. This increased the available space by 15 per cent and eliminated the constricted throat construction into the slag pockets.

Flat Suspended Arch in Roof

Regenerator roof is an American flat suspended arch of 12-inch brick insulated by 1 inch of granules, covered with ½-inch of insulating cement. The neck arches also are suspended and lead to a suspended nose arch of the Simplex interlocking type at the slag pocket end. Regenerator roof construction is of first quality firebrick, while the neck arches and nose arch are of super quality firebrick. The throat between slag pocket and checkers is 14 feet, 2 inches in length. Sides flare from 14 feet, 5 inches at slag pocket to 24 feet, 9 inches at checkers. The opening at top of bridge wall into checkers is 3 feet, 6 inches by 24 feet, 9 inches, or approximately 90 square feet in area. This type of construction provides a slow, even flow of gases with good distribution of heat to regenerators.

Checker chambers are 24 feet, 9 inches in width by 20 feet, 3 inches in length. Checkers themselves are of the Loftus type with a heating surface of 26,780 square feet, which is equivalent to 178 square feet of area per ton of hearth capacity. The checker openings are 6 inches square in all directions. The height from floor to top of checkers is 18 feet, 6¼ inches. The depth of checkers varies from 13 feet, 4 inches at flue entrance to 14 feet, 5 inches at bridge wall. The walls are of firebrick 22½ inches thick backed up with 4½ inches of insulating brick on which is a 1-inch insulated coating. The floor consists of 4½-inch firebrick laid on a 5-inch insulating brick. Thermocouples are set in the front bulkheads at basement floor levels.

Furnaces are equipped with waste heat boilers of the horizontal fire-tube type of Inland design with a superheater ahead of the oiler. The boilers are rated at 20,000 pounds steam per hour at 210 pounds pressure. An induced draft fan is set at the end of the boiler with a rating of 45,000 cubic feet per minute. It is driven by a 125 horsepower, alternating current motor at 750 revolutions per minute.

Dampers Water Cooled

Dampers are all Blaw-Knox, water cooled. The stack is 165 feet high, 6 feet inside diameter and is lined with 6-inch blocks.

Flues are laid out to give as direct a flow of gases as possible and to provide a balanced condition on reversal. Flues are 4 feet, 6 inches wide and are constructed of 9 inches of firebrick, then 4½ inches insulating brick backed up with common brick 13½ inches at base, battered to 4½ inches. Calculated gas velocities through the furnace system are 18 feet per second over the furnace bridge wall, 15 feet per second from slag pocket to checkers and 11 feet per second through checkers.

Fuel on these furnaces is oil, or oil and coke-oven gas. Tar also can be used. Oil is atomized by steam from boiler superheaters. Individual furnace oil heaters, using steam as the heating agent, keep the oil at a constant temperature, thermostatically controlled. A thermometer indicates oil temperature on the operating panel. A positive displacement oil meter and recorder shows the total oil consumption and an indicator on the panel shows the instantaneous rate in gallons per hour. The flow of oil is set by micrometer valves. In the fuel lines at each end of the furnace are motor-operated valves protected by a water cooled jacket. These are controlled by a switch on the instrument panel. Closing the valves for furnace reversal breaks the circuit controlling the induced draft, leaving louvres open, which allows the other valve to be opened quickly.

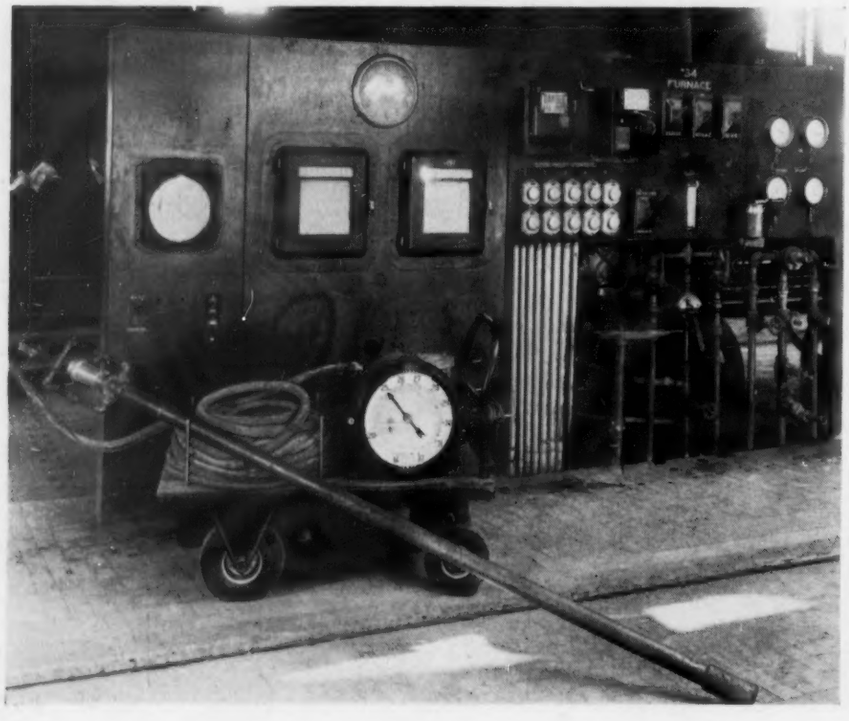
The instantaneous oil rate in gallons per hour is shown on the panel so operator can set the amount of oil desired for any state of the heat. The proper amount of combustion air is set from indicators on an air-flow meter and this volume is kept constant automatically at the set position by an air flow controller regulating the louvres on the inlet side of the forced-draft fan.

Pressure Controlled Automatically

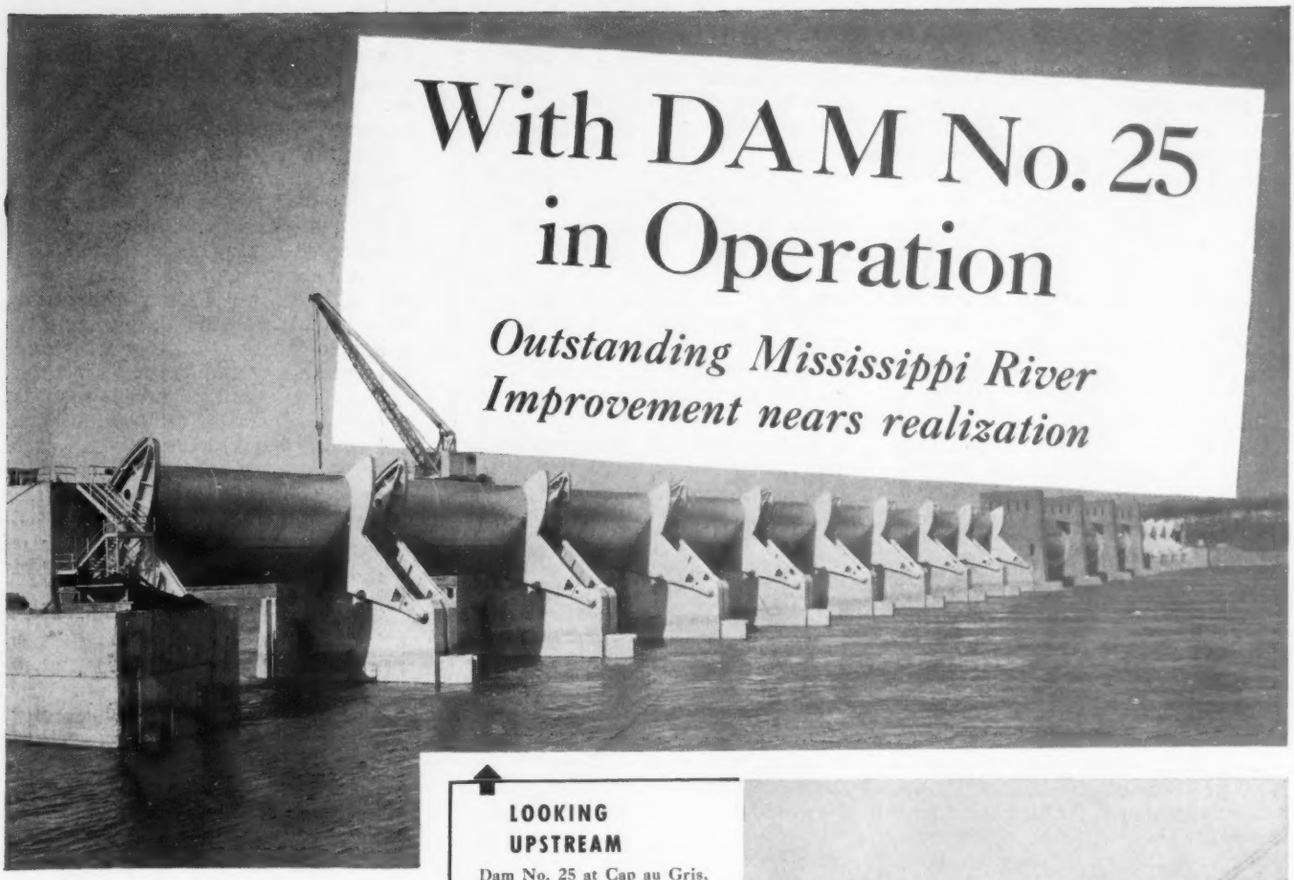
Furnace pressure is controlled automatically by an electrically-operated pressure controller and motor-operated louvres on the induced-draft waste heat boiler fan. Furnace pressure is recorded on the panel by a sensitive pressure recorder.

Checker temperatures are recorded on a two-point Micromax potentiometer which also shows elapsed time between reversals as well as the temperature balance in the checker systems. Furnace reversals are controlled electrically by a master switch. On the last five furnaces built, roof temperature recorders were added to the other controls already provided, as a further aid to the furnace operator in getting the maximum out of the furnace without any damage to it.

Open-hearth bath temperature measuring equipment shown in an accompanying illustration is a product of Leeds & Northrup Co., Philadelphia. One of the first applications of this equipment is in connection with the new Inland fur-



New control board at Inland's open-hearth department. Note portable type of electric-eye equipment used to measure bath temperature on rubber-tired truck in foreground



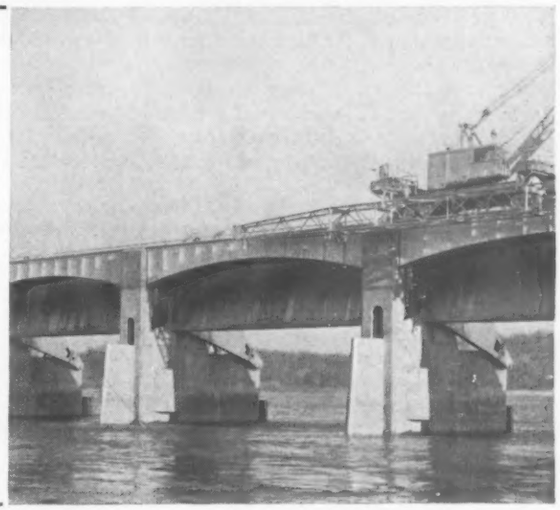
With DAM No. 25 in Operation

Outstanding Mississippi River Improvement nears realization

LOOKING UPSTREAM

Dam No. 25 at Cap au Gris, Mo., comprises 3 Roller Gates flanked by 14 Tainter gates. All gates are of the latest submergible type, ranking among the largest built. The Tainter gates measure 60 by 25 feet, the Roller gates 109 ft. 3 in. by 25 ft. Included in this installation are the operating and heating equipment, bulkheads, water seals, operating and storage houses, pipe hand railing and 1512 linear feet of service bridge structure of curved bottom flange plate girder construction.

The "Canalization of the Upper Mississippi" is under the direction of the Division Engineer, Upper Mississippi Valley Division of the U. S. Army Engineers Dept.



IN 1940, with the completion of the last of twenty-six control dams on the Upper Mississippi River, the 650-mile course from Minneapolis, Minn. to Alton, Ill. will have been converted into a series of stepped pools with a minimum navigable depth of 9 feet. A river canalization job probably without parallel.

American Bridge Company, as subcontractor, has participated extensively in this amazing improvement program. It has supplied and erected the major portion of the steel requirements for 8 of the 26 dams and in two instances all of it. It has also furnished incidental fabricated steel and machinery parts for 7 additional dams. Dam No. 25, recently completed at Cap au Gris, Mo., is one of many American Bridge installations.

The significance of this extensive participation is emphasized by the exacting requirements in both material and workmanship. These highly specialized dam structures—involving as they did Tainter, Roller and Swing Gates complete with machinery and heating equipment, service bridges, bulkheads, water seals and the other necessary parts for effective operation and maintenance — give conclusive evidence of American Bridge Company's fabricating resources and personnel capability.

AMERICAN BRIDGE COMPANY

General Offices: Frick Building, Pittsburgh, Pa.

Baltimore · Boston · Chicago · Cincinnati · Cleveland · Denver · Detroit
Duluth · Minneapolis · New York · Philadelphia · St. Louis

Columbia Steel Company, San Francisco, *Pacific Coast Distributors* · United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL

naces. Open-hearth bath temperatures have been measured by several types of "quick immersion thermocouples" immersed in the molten metal for short periods. With the equipment illustrated, the Rayotube element does not dip into molten metal but is located outside the furnace door. However, the rayotube sights down through an iron pipe which passes through the wicket hole in the door and is immersed through the slag into the molten metal.

Temperature Taken in Metal

A definite pressure of dry air forced down the pipe prevents slag and molten metal from entering the sighting tube. This permits the Rayotube to be sighted directly into the bath where it measures the temperature in approximately 10 to 12 seconds. An indicating and recording potentiometer gives a permanent record on a special chart. The sighting tube may be used for several measurements and repeat readings may be taken at approximately 10-minute intervals.

In a shop of this size, congestion is a problem of major importance and one to which serious consideration had to be given. For this reason, stock is delivered from both ends. Two scrap yards, each with three magnet and one bucket crane, load out scrap and raw materials, each over its own weighing scales. Stock is delivered over high-lines since the track system from scrap yard to floor forms a complete loop.

Hot metal delivery, likewise, is carried on from each end. The old south end of the shop is equipped with a 600-ton electrically operated mixer and also has facilities for handling Pugh metal direct. Transfer ladles on this end are of 45 tons capacity. The new north end of the shop is equipped with a 1200-ton mixer and also has facilities for handling Pugh metal direct. Transfer ladles are elliptical in shape and all-welded construction with a capacity of 75 tons. Five hot-metal cranes carry hot metal to furnaces and take care of the floor work.

Dolomite Guns on Floor

The floor is equipped with dolomite guns to save time, labor and avoid congestion on the floor. Compressed air is supplied at each furnace for cleaning out holes in bottom.

Six ladle cranes handle the steel teeming. The two new ladle cranes built to handle steel from the new furnaces are of 200-ton capacity. New steel ladles are elliptical in shape and of all-welded construction.

Heats are delivered to two strippers, each of which serves its own bloomer. The new stripper also is equipped with steel handling tongs for transfer of ingots to standard-gage cars for delivery to the bloomer. This stripper is of 200-ton capacity, with 20-ton auxiliary hoist.

Pit track system is narrow gage and motive power is supplied by 75-ton oil-burning engines. Three mold yards take care of mold storage and mold conditioning. Every mold is scraped clean, washed in water and coated with tar before each time it is used. Mold heating ovens are of brick construction and will hold several sets of molds. A quenching station for cooling molds insures adequate control of mold conditions. All rolling stock, including pan cars and ingot cars, are equipped with roller bearings to save on power and maintenance. Skull cracker and slag yard disposal facilities have been increased to handle the load from the new furnaces.

These new furnaces, on campaigns recently completed on the first four constructed, have tapped an average of 155 gross tons per heat, making 270 gross tons per furnace per day. An average roof life of 414 heats was obtained. The average total production per campaign was 64,057 gross tons. Fuel consumption averaged 30.6 gallons per gross ton. While all grades of carbon steel were made on the furnaces, the bulk of the tonnage was low carbon strip steel. The best monthly production rate so far obtained (largely on high iron changes) was 9721 tons, or 313.5 gross tons per furnace per day at an average fuel consumption of 26.4 gallons of oil per gross ton of ingots.

Small Cutting Machines Prove Valuable

■ **In fabricating heavy plate for refinery equipment, Wyatt Metal & Boiler Works, Dallas, Tex., uses small motor-driven oxyacetylene cutting machines like the one shown here. All types of curved cuts as well as straight edges are prepared with such units using track curved to the same radius as the cut desired. This has made possible great economies in preparation of large dished heads, etc. Cutting edges of heavy plate as shown above with these units permits cutting work near the stock pile, thus reducing handling, increasing production and minimizing floor space required**

Patternmaking Practice Covers Wide Field

■ *Patternmaking for Engineers*, by J. G. Horner, revised and enlarged by Philip Gates; cloth, 390 pages, 5 x 8 inches; published by Technical Press Ltd.; furnished by STEEL, Cleveland; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London, S.W. 1.

Merit of this book is indicated by the fact that this is the sixth edition of a work originally compiled from a series of articles presented in the technical press by a man particularly well qualified for the task.

The material is for the benefit of patternmakers, draftsmen lacking in shop training, pupils in schools and apprentices in shops, employers and managers in engineering works and to all others who seek more than a mere smattering of knowledge relative to an important branch of engineering construction. Although essentially a treatise on patternmaking, the text in most instances is extended to many features connected with making molds from the patterns.

INDUSTRIAL EQUIPMENT

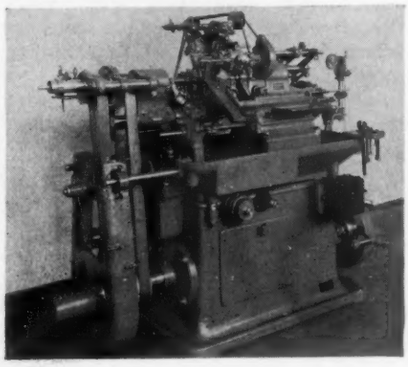
Motor Reducer

■ Philadelphia Gear Works, Erie avenue and G street, Philadelphia, offers its PlaneTorque MotoReduceR, a motor drive providing protection for agitators, mixers, conveyors or any equipment that might jam or become overloaded. Motor is shut off automatically and instantly when load exceeds a predetermined value. Unit is ready to start without resetting as soon as excessive load is removed. When excessive torque is imposed on output shaft of reducer, increased torque required to rotate planet gears mounted on output shaft

spider transmits a higher torque to the internal gear which is held in normal position by lug and heavy spring. When torque on internal gear exceeds a predetermined value, torque spring is compressed. This movement of lug actuates switch at top disconnecting power. These units are furnished for clockwise or counter-clockwise rotation or for both.

Bechler Screw Machine

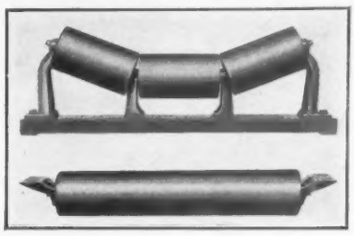
■ Triplex Machine Tool Corp., 125 Barclay street, New York, offers series BE Bechler universal high precision automatic screw machines in six sizes up to ¾-inch featuring great rigidity and positive feed of tools and work. More than 30 attachments can be furnished in many different combinations. All attachments, cams, etc., are interchangeable on the three smaller sizes and likewise on the three larger sizes. Unit produces long and complicated pieces without second operations and has high spindle speeds, giving greatly increased production. Double micrometer adjustment to all toolholders permits accuracy to within 0.0005-inch and less. The 88 to



100 production speeds to camshaft through patented drive permit a wide variety of work to be handled at correct speeds necessary for maximum production. None of the tools have longitudinal travel, but stock travels intermittently past the tools. Headstock spindle, which rotates the bar stock, advances and recedes along a slide and pushes bar through a fixed steady bushing located just behind the tools. Combined movements of tools and headstock spindle permit unlimited variety of pieces to be formed.

Troughing Idlers

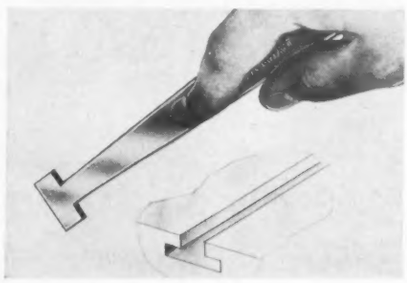
■ Robins Conveying Belt Co., 15 Park Row, New York, offers roller bearing troughing and return idlers. Malleable iron supporting brackets are of streamlined design and crescent section, giving maximum



strength and pleasing appearance. New triple seal assembly prevents escape of grease or entrance of grit or moisture. Troughing idler shaft and pulley assembly may be completely dismantled and reassembled without use of tools. Return idler shaft and pulley assembly may be lifted out from between conveyor stringers without disturbing bracket connections.

Table-Slot Cleaner

■ A tool for removing metal chips from table slots of machine tools is



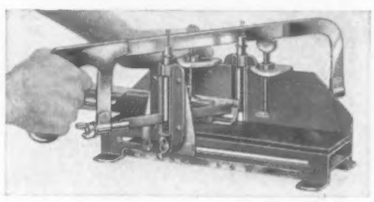
offered for free distribution by Dayton Rogers Mfg. Co., 2830 South Thirteenth avenue, Minneapolis. Tool is die cut from cold rolled steel and plated to prevent rusting. Hole is provided in handle for attaching chain or hanging.

Duplex Compressors

■ Chicago Pneumatic Tool Co., 6 East Forty-Fourth street, New York, has developed horizontal tandem duplex motor-driven compressors with five-step regulation of O-CTE compressors. Pistons of one side are of same sizes and weights as those of other, equalizing inertia and air loads of the two sides. Either side can be operated alone, giving half capacity. Connecting rods are solid-end, wedge-adjusted. Coupled piston rod permits easy dismantling. Cylinders and heads are completely water-jacketed. Unit has metallic oil-wiper rings, floating head intercooler, forged steel crankshaft and babbitted main bearings.

Mitre Box

■ A metal cutting mitre box for cutting aluminum, white metal, monel metal, brass, bronze, steel, stainless steel, wood, plastics, etc., is announced by Stanley Tools, New Brit-



ain, Conn. Unit has capacity of 2¼ x 3 inches. Box is all steel and has cast iron saw guides reinforced with steel. Saw guide posts are "snap-on" type ground to fit into saw guides. Angles of 90 degrees and less, right or left, can be cut. Sliding front guide securely held in position by clamp bolt and wing nut is used to obtain different angles. Mouldings must be supported with wood filler blocks, two of which are furnished with box. Base, back and saw guides are lacquered blue. Other parts are nickel plated.

Adjustable Conveyor

■ PortAFlow conveyor designed by Alvey-Ferguson Co. Inc., Oakley station, Cincinnati, has integral ball-bearing rollers independently mounted either straight or staggered every 4 or 8 inches in sheet metal troughs mounted on steel angle supports affording 6-inch adjustment in height.

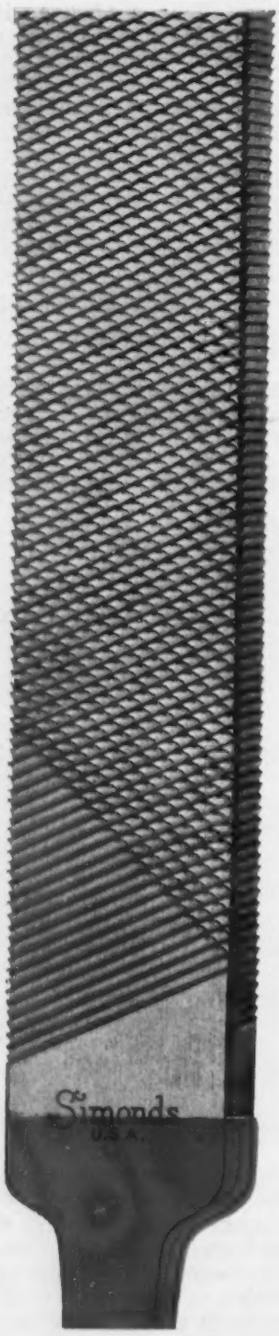
For greater movability and handling ease, supports are equipped with legs having 3-inch ball-bearing swivel casters. A 10-foot section weighs only 68 pounds. By means of pin and plate connections, sections are joined together as single unit. To facilitate loading and unloading of freight cars and trucks, reversible curves are designed for either right or left turns, having channel side guards when required.

Strain Clamp

■ To increase range of conductors accommodated, Ohio Brass Co., Mansfield, O., has redesigned its Hi-Lite strain clamp to take 0.20 to 0.55-inch conductors without liners. This range includes copper conductors from No. 4 solid to 4/0 stranded. Clamp with liners will take conductors from No. 4 A.C.S.R. to 2/0 A.C.S.R.

Top-Seat Valve

■ The "Topsy" top-seat valve, consisting of body made of square brass rod, raised valve seat or orifice, stamped rocker, two brass washers, lock-nut, brass tube nut and sleeve, packing, and cotter pin, has been developed by Air Conditioning Supply Co., 4060 Superior avenue, Cleveland. Orifice is easily cleaned in place by withdrawing cotter pin which removes rocker, rod and float assembly. Design permits orifices of various sizes which are adaptable to wide range of capacities and pressures. Interchangeable gaskets adapt valve to control of various fluids at various temperatures and pressures. Valve has sensitive rod and solderless copper float, position of float being determined by locking assembly which consists of stainless steel bolt, brass wing-nut and roughened friction surfaces.



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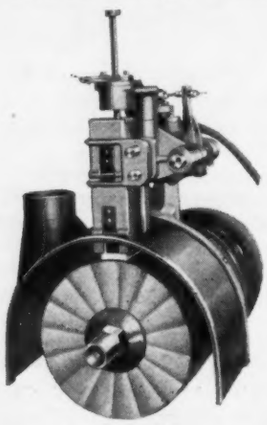
Applies Composition to Buffing Wheel

■ Hammond Machinery Builders, Kalamazoo, Mich., announces Auto-Doper for automatically applying composition to wheel of buffing equipment. Unit is operated by compressed air through a three-way



valve timed to conveyor of buffing machine. On machine without conveyor unit, timing of application can be arranged for by electric timing device or by foot operated valve. Standard unit handles bars from 2 inches square up to 2 x 6 inches, saves 25 to 50 per cent on composition and provides more uniform and regular application of composition. Auto-Doper can be used on regular run of lathes and automatic equipment being used.

Heavy Duty Rheostat

■ For adjusting speed of motors in severe service, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., announces a mill-type field rheostat with 60 point speed control and individual resistance tubes. Entire assembly is in a wall-mounting steel enclosure perforated for ventilation.

Portable Hand Lamp

■ A dry cell portable hand lamp, Big Beam No. 1000, is marketed by U-C Lite Mfg. Co., 500 North Dearborn street, Chicago. Housed in an all steel container in red or black baked enamel, it has a polished cast

aluminum handle and chromium-plated brass lamp head. It projects a powerful ray over a distance of 2500 feet. It is also of value for watch service, factory maintenance, machinery repair, and care of large tanks, boilers, retorts, sewers, conduits and other inaccessible places. Lamp has main bulb, auxiliary bulb and crystal glass lens 3/16-inch thick and 7½ inches in diameter. Battery is capable of lighting main bulb

from 8 to 10 hours continuously. Battery terminals are simplified expanded type. Unit cost $22.50 f.o.b. Chicago.

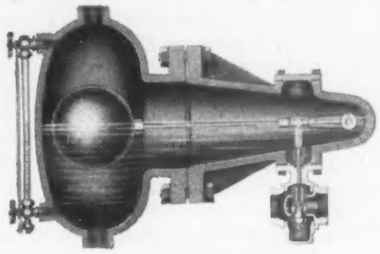
Nonmetallic Bearings

■ Gatke Corp., 228 North La Salle street, Chicago, has nonmetallic moulded Tuftex bearings with long wearing qualities and much lower friction than ordinary nonmetallic bearings. Bearing surface approaches hardness of steel, yet cannot score journals. Bearing has dense but resilient structure which

withstands pressures and shocks that reduce life of metallic bearings, and is claimed to be successfully applied where operating conditions cause rapid wear and high maintenance of conventional bearings and for use in water-lubricated, oil- or grease-lubricated or self-lubricating applications.

Feed Water Regulator

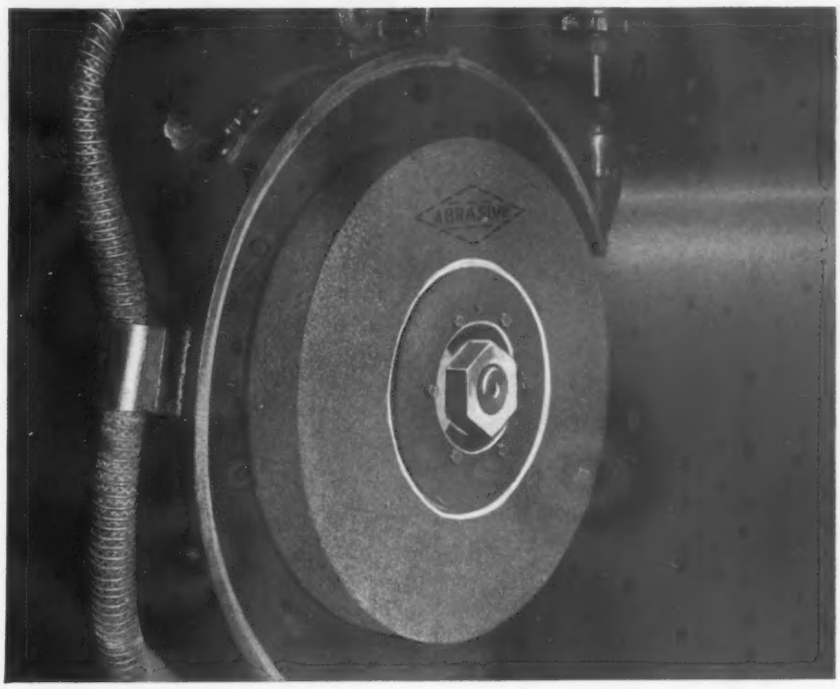
■ Feed water regulators for steam boilers are announced by McAlear Mfg. Co., Chicago. Regulators not only maintain constant safe water levels automatically in any steam boiler, whether operated singly or in batteries, but also prevent damage by stopping burners or stokers when, in case of failure of water supply or pumps, boiler water reaches dangerous level. Boiler



water level required for safety is reproduced exactly in float chamber of regulator and a drop in level causes the float-controlled independent feed valve to open in proportion to supply the necessary makeup water. All regulators in series are constructed of semi-steel, with stainless steel float and trim, for pressures up to 250 pounds, and of cast steel, with stainless steel float and trim for pressures of over 250 pounds.

Air or Hydraulic Valve

■ C. B. Hunt & Son, Salem, O., offers air or hydraulic valve of single plunger construction having only one moving part. With outlets and inlets in sides, it can be serviced on



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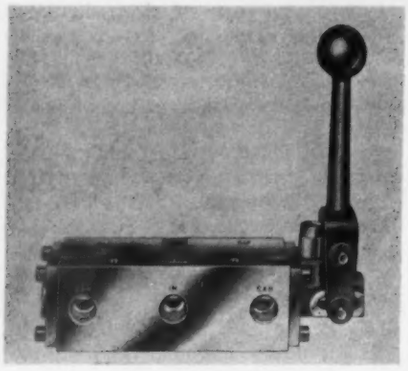


job without dismounting. Individual exhaust outlets controlling each end of double-acting cylinder make independent speed control of piston in either direction easy. There is no metal-to-metal contact, so there is no lubrication problem. The higher the pressure, the tighter the seal. Unit is made in 25 styles of valve control, and sizes from ⅛ to 1¼ inches inclusive.

Rotary Gear Finisher

■ Michigan Tool Company, 7171 East McNichols road, Detroit, offers improved "860" rotary gear finishing machine. Drive from motor to cutter spindle and table feed employs two sets of Cone area-contact

worm gears, eliminating some ten gears in drive chain and making machine smoother and almost noiseless. Provision has been made for an indicator attachment, permitting rapid resetting of machine for finishing sizes and types previously cut. Four-to-one-ratio table lift mechanism raises work spindle into proper relation with cutter spindle.

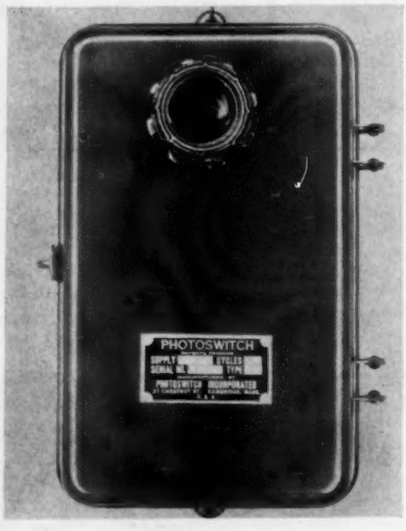
Lathe Bench

■ An all-steel welded bench to provide suitable support for lathes has been developed by South Bend Lathe Works, South Bend, Ind. Bench has no sharp corners in which dirt or chips might collect and no angular projections hazardous to workmen. Around top of bench is deep rolled rim which serves as chip pan or oil pan. Sides and back of bench are enclosed on smooth panels securely welded to frame work. Front is open to permit operator to take comfortable working position either sitting or standing. Bench is finished in standard machine tool gray. Lathe motor drive equipment is located in left side of bench. Right

side has three large drawers for storage of chucks, tools and accessories. Each drawer has an individual tumbler lock combined with a latch and knob.

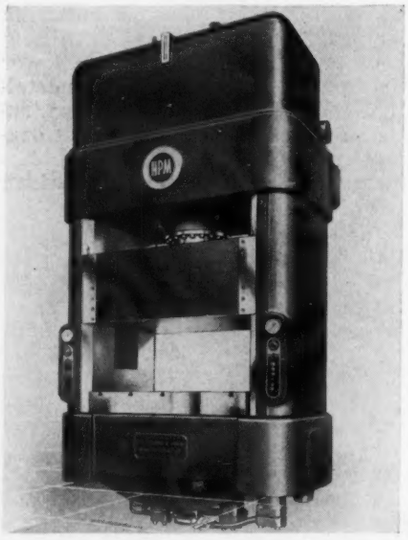
Electric Eye Control

■ Photoswitch Inc., Cambridge, Mass., offers an electric eye for automatic control of mechanisms and processes. Unit contains no sensitive parts and is housed in a water and dust-proof case. Typical applications include smoke control, counting on loading chutes and conveyors (including hot objects), valve control, alignment on packaging machines, signals and alarms, checking idle time of machinery and furnaces, inspection grading for height and size, kink detection in cables and fencing off of high-voltage and dangerous machinery. A light-beam fence up to 100 feet long may be erected or removed instantly and readily adapted by mirrors to any reasonable shape. When a workman crosses light beam, Photoswitch operates an alarm, a light, or turns off machine itself. Unit is available with phototube located in small housing remote from control and wired to it with special cable. Counter model C30 incorporates electrical counter integral with control housing. Counter operates directly (without a relay) from control circuit output. Net prices (including light source) of Photoswitches range between $40 and $50.



Double Action Press

■ Hydraulic Press Mfg. Co., Mount Gilead, O., announces a "Smooth-Line" H-P-M Fastraverse double action drawing press with two separate hydraulic pressing members—main slide, and die cushion platen located underneath bolster plate.



Main slide is actuated by a double-acting piston type ram working in a smooth-bored steel cylinder. Hydro-Power radial pump is directly connected to main cylinder without operating valves. Main ram movement is controlled through regulation of pump output, which is both variable and reversible. All piping, wiring, linkage and other power equipment is completely concealed, but easily accessible. All gages and control stations are flush mounted into press frame. Massive construction including deep, long gibbed main slide and extremely heavy steel bolster plate make this unit suitable for most accurate type of sheet metal work.

ADVERTISING PAGES REMOVED

Mill Features Bypasses

(*Concluded from Page* 49)

rolls have been installed in place.

The spare stand pits are located next to the structural mill, and are served by the 75-ton crane mentioned above as well as a 50-ton crane for roll handling. Sufficient stands are provided so a complete setup can be made preparatory to setting the stands in the mill train.

Finished sections are carried on the runout tables to a hot saw, where they are cropped and cut to desired length. Proper length is determined by a motor-operated set of two gage heads.

From the saw, sections are carried on a roller table to the hot bed for cooling. This bed has overall dimensions of 70 x 225 feet. It is arranged in three units in parallel. These units may be used singly or tied together electrically or mechanically to serve either two or three at a time. This permits handling sections of any desired length.

Third Bypass

At the end of the hot bed are two rotary straighteners. Each of these is equipped with a hydraulic shifter to move the unit in or out of line as needed. This is a third bypass, as it permits the rolls to be changed on the unused machine in preparation for the next type of section to be straightened. The new straightener is equipped with improved methods of roll adjustment. Its gear drives are enclosed and lubricated with circulating oil. Vertical roll units are mounted on each end of machine.

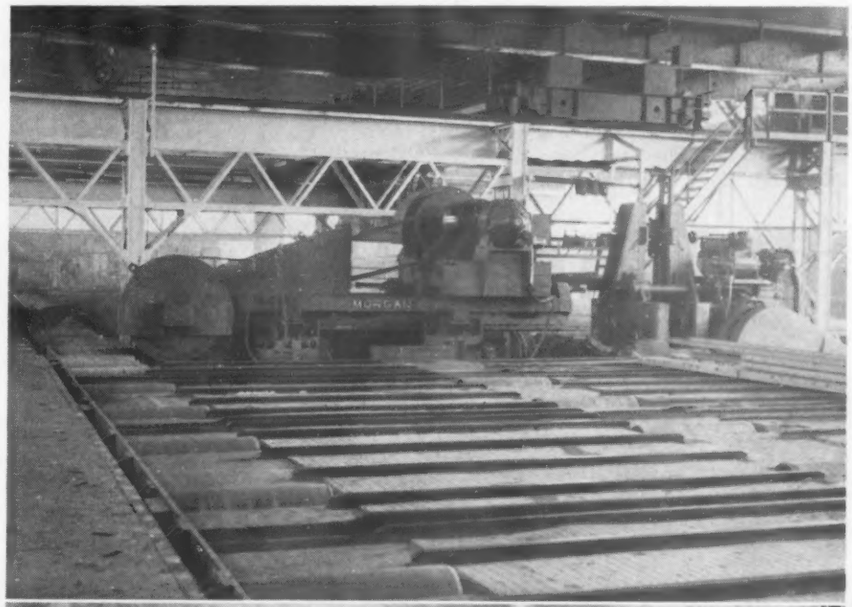
Transfers are provided on the delivery side of the straighteners to carry products of the 23-inch mill to a vertical shear and products of the 29-inch mill either to a gag straightener or to a cold saw.

In moving the 29-inch production, an interesting materials handling operation takes place. Due to the geographical layout of the plant, it is necessary to move the sections into a building placed oblique to the transfer path. To do this, a skew has been made and set into the transfer at the desired angle. It consists of a set of rollers, power driven and of varying widths. Upon hitting these rollers, the sections are turned the necessary angle and roll on the finishing department transfer table. This unit feeds both the gag straightener and cold saw, providing flexibility in handling to either machine. By means of disappearing side guards, sections which do not require further processing are passed over the skew table to a set of cranes.

Finishing department is equipped with four cradles as well as two overhead cranes traveling at right angles to facilitate loading sections into cars at the freight dock. These cars transport the sections either to the customer or to storage in the new warehouse. This warehouse is equipped with a shear, a cold saw, gag straightener and necessary tables, cradles and skids to handle and further process sections. It adjoins the structural building.

•

■ General Electric Co. has on its pension rolls a retired employe who has been receiving a pension for more years than he had active service with the company. He is Frank Beute, Erie, Pa., machinist, now 89 years old, who was retired 23 years ago, after 21 years service.

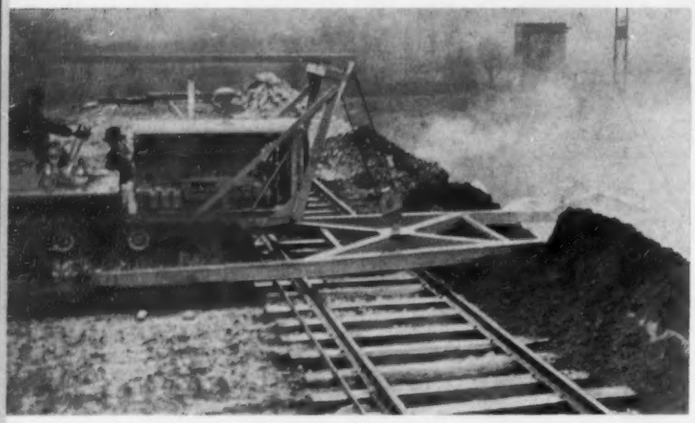


Top, delivery side of hot saw. Automatically controlled gage blocks determine length of section severed. Center, roller straighteners. No. 2 in foreground has been rolled back, bringing a section of roller conveyor into position and permitting rolls on this straightener to be changed without interrupting the production. Bottom, this series of rollers turn sections about 30 degrees, necessary because building in foreground is located askew to transfer table

Handling PROBLEMS

Builds 275-Ton Crane for TVA

■ This huge electric crane will be used by TVA in the Chickamauga dam power house near Chattanooga, Tenn., to install and service large turbines. With a 70-foot span, the unit is guaranteed to lift a test load of 343 tons. Crane itself weighs 242 tons, is 30½ feet wide, 17 feet high. Photo courtesy Shaw-Box Crane & Hoist division, Manning, Maxwell & Moore, Muskegon, Mich.



Bulldozer Aids Slag Disposal

■ Slag and refuse from the steel plant of the Timken Roller Bearing Co., Canton, O., are deposited in piles near track and pushed into pit by this tractor bulldozer. Frame of bulldozer pivots on tractor and allows blade to suck down into pile till frame rests on rails, which hold grade line while tractor pushes on pile. As pit is filled tractor pushes track over on fresh fill. Photo courtesy Caterpillar Tractor Co., Peoria, Ill.

Locomotive Pulls Interplant Loads

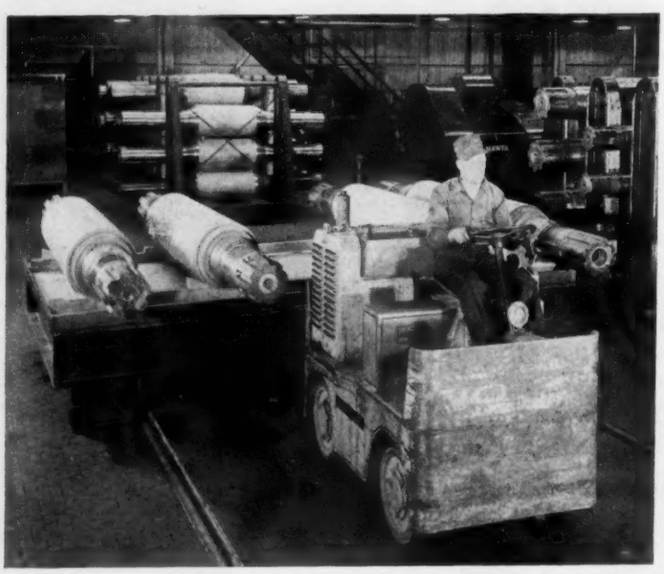
■ For heavy interplant hauling at the Kinkora works of John A. Roebling's Sons Co., Roebling, N. J., this 30-ton locomotive is used. It is powered by a Caterpillar V-8 diesel engine and operates principally in connection with the hot mill

Alloy Steel Reduces Trailer Weight

■ Built by Hume Sinclair Coal Co., Tiger, Mo., for use on its own premises, this alloy steel semi-trailer weighs 32,000 pounds or 30 per cent less than if it were made of plain carbon steel. Of welded construction throughout, trailer is 32 feet long, 12 feet wide and 11 feet high. Capacity is 70 tons of coal. Photo courtesy Bethlehem Steel Co., Bethlehem, Pa.

Roll Transfer Car On Rails

■ This roll transfer car at Irvin works of Carnegie-Illinois Steel Corp., can carry a maximum of 6 rolls from storage racks to stands. Car rides on rails and is pulled by gasoline truck



Container Plant

(*Continued from Page* 61)

three other presses and drying ovens at the west side of the court where the third color is applied. This is followed by a fourth color and varnish application handled by equipment along the north side of the court. Thus, sheets make a complete circuit of the circuit during these operations with no backtracking.

Materials handling, due to the extremely great volume of work here, has received more than usual attention to assure minimum delay in transferring from one drying oven to next lithographing press. A rather unique setup is employed. Feeding sheets into the presses by hand from stacks would ordinarily involve a delay when placing a new stack in position. However, a special arrangement eliminates such possible delays so sheets can be fed continuously without missing a stroke.

As sheets come from the drying oven connected to the previous press, they are placed in a stack on a permanent section of roller conveyor adjoining the end of the drying oven. After a stack has accumulated, it is rolled on to a floor truck, also fitted with a short section of roller conveyor.

Continuous Feed to Presses

This truck is moved to a point near the next lithographing press. When operator reaches last few sheets on the pile being fed, he lifts these from the feeding bed and holds them while feeding the press. During this time, a second operator has rolled the floor truck even with the loading platform and cranked it up into feeding position so first operator can feed off top of the new stack as soon as his stock is exhausted, thus assuring continuous operation without missing even one sheet.

This handling setup has been found a most essential part of the equipment necessary for maximum production.

Since containers made on the high-production setup are filled at a plant some distance away, it has been found advisable not to ship the assembled containers but rather to send the parts flat for assembly at the user's plant. One carload of sheets makes seven carloads of these containers. For this reason, sheets are not slit at the Heekin Can Co. but are shipped flat in the original size in packages of 112 sheets per box.

To get these boxes from the inspecting and counting department on second floor to the first floor, a special type of conveyor has been installed, the delivery end of which is shown in Fig. 5. This view was taken in the shipping department on the first floor. To prevent these newly lithographed sheets from sticking together, they are handled and shipped on edge.

The special conveyor consists of a gravity chute and speed control devices designed to deliver the boxes on edge at the shipping floor without shock or jar. Boxes travel down the conveyor, are deposited on edge and are moved out in a continuous row on edge in the conveyor unit just back of the two men in Fig. 5. Thus, whatever jar is involved does not force the sheets together.

Box Conveyor Has Indicating Light

This special box conveyor is fitted with indicating lights and remote control pushbottons so boxes are delivered to shipping room as wanted, facilitating shipping.

From the skid shown in Fig. 5, sheets are picked up by fork-type truck, carried into the freight car and stacked on edge for shipment to the user's plant, where they are slit, formed and assembled into the completed container units.

Second floor houses a number of assembly lines and company offices. Fig. 2 shows one of the automatic assembly lines. Here will be seen storage boxes from semifinished storage on third floor containing parts for the containers. Assembly starts on machine in background where sheets are edged in preparation for making the side seam of the container, formed to circular or other shape as desired, bumped to close the side seam, top and bottom curled to receive top and bottom parts of the container and the units fed through skeleton duct conveyors to the next machine where the container bottom is placed in position and seamed automatically.

From this machine, other skeleton duct conveyors carry the units to a third machine where tops are placed in position. Completed containers are packed in cartons ready for shipment.

In some containers, side seams must be soldered to make watertight. This soldering is a unique operation. The joint is passed over a revolving wheel on an automatic conveyor, the lower portion of the wheel is immersed in a bath of molten solder, thus soldering the joint. Solder bath is kept at the correct temperature by newly developed electric heaters which afford considerable heating economies. Installations of these General Electric heater units has made important savings in heating costs as well as providing other advantages such as cooler working areas, more uniform tinning operations, etc.

Handling Handicapped by Building

Due to the extremely wide variety and the fact that production is in lots, handling operations of necessity are somewhat complicated. Also, handling could have been improved greatly if it had been possible to plan the building around the manufacturing operations instead of having to fit the operations into the building arrangement as was the case here. Doubtless many other plants have this same problem of

poor building layout but it has been solved exceptionally well here by means of elevators, conveyors and special handling equipment described. Since it is recognized that handling costs are extremely important, constant consideration is given to methods of improving handling.

Open-Hearth Improved

(*Concluded from Page* 46)

about half conduction and half storage. Since it is just as expensive to regain lost heat storage as it is to melt the charge, conserving heat storage by quick charging results in an estimated saving of four hours according to values in Table II.

Assuming average heat of 12 hours, then saving in time per Table II is 33 1/3 per cent. This means two furnaces will produce the same amount of steel which now requires three furnaces. According to Table I, this reduces fuel, labor, furnace rebuilding and similar costs, by $0.87 per ton of ingot.

In Table III, savings are summarized, showing a total of $1.023 per ton of ingot, which, after writing off original cost of the four improvements, would become net savings.

Road Graders

(*Concluded from Page* 54)

ing, using direct-current welding.

After welding these two channel sections together, a ⅝-inch plate is welded on each end to close the housing. Then housings are machined in a jig as shown in Fig. 4. Previous to the jig boring operation, the large surfaces on the side of the housing to which the bearings are bolted are ground in a large surface grinder to produce perfectly flat mounting surfaces. After the large 13½-inch holes have been machined by boring in the jig set-up, the smaller mounting holes are drilled, and drive assembled.

Blade structure shown suspended beneath the grader in Fig. 2 is fastened to a ball-and-socket joint at front apex of grader frame as shown in detail in Fig. 3. Front cross brace or yoke is made up of heavy plates arc-welded together to form an extremely sturdy construction since all power transmitted to grader must go through the ball-and-socket joint positioned here.

An engine unit of somewhat unusual design is shown in Fig. 6. Here the engine is mounted directly above the transmission and drive instead of in front as shown in Fig. 5, which is conventional design.

With machines almost entirely welded, great flexibility is obtained when slight variations in design are desired. Also improvements can be made rapidly. All welding is done using General Electric individual direct-current arc-welding sets.

Enamel Simulates Metal

■ A new baking enamel known as Baking Plate lustre developed by Maas & Waldstein Co., Newark, N. J., is claimed to make any polished metal resemble brass, chemically treated aluminum and steel and other colored metals. Enamel is applied by spraying or roller coating. When baked, it will resist action of cleaning operations and also nickel, chromium and other plating baths so that, when applied sectionally, a wide variety of effects is possible.

Mirrors of Motordom

(*Concluded from Page* 30)

which ice is placed before each run. This tank, as well as fuel and oil tanks, are carried at the side of the frame.

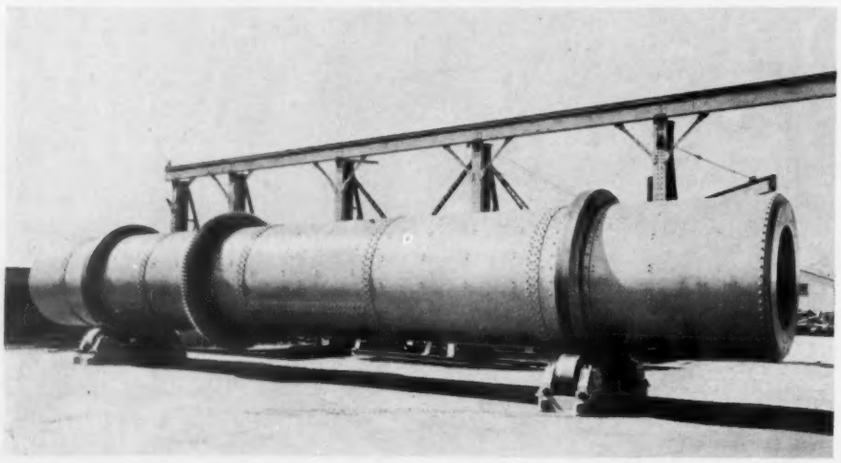
Wheeblase is 13 feet 6 inches, overall length 28 feet 8 inches, approximate weight per horsepower 2.8 pounds. Builder is Thomson & Taylor (Brooklands) Ltd., suppliers of materials and parts include a list of about 20 companies in the British Isles.

Mr. Railton states low weight was of extreme importance in the design of this unusual car, (1) to reduce rolling resistance and (2) to enable the tires to stanl up under the terrific speeds. Incidentally, the rubber tread over the tire cord structure is only 1/32-inch thick. A set of tires last for only one 10-mile run, the rubber tread being thrown off by the centrifugal forces encountered. The car is reported to have cost $50,000 to build, exclusive of engines. This is the second annual attempt of Cobb and Railton to set a new speed record. Last year they made 350 miles per hour, but this clip was exceeded a short time later by Sir Malcolm Campbell's car.

■ STEERING column gearshifts will be practically 100 per cent on all makes of cars when next year's models are announced. About the only make not now so equipped is Ford and it is understood all Ford models except the standard will be provided with steering column gearshift next year. Several of these shifting mechanisms are being improved for the new cars to silence complaints about stiffness or sticking encountered with some of the present designs.

Automotive sales outlook for the 1940 model year was characterized by W. S. Knudsen, president of General Motors, as good in one of his post-strike statements. He said the corporation probably would build as many cars as were turned out this year, and perhaps a few more because of the earlier introduction dates on some models. Elsewhere in the industry the figure of 10 per cent over 1939 model totals has been suggested. A Pontiac spokesman indicated the 1940 model total would be above the present year, because the industry has never experienced only one "plus" year such is now concluding, the "up" years always being two or more in succession.

Rotary Dryer Has Cast Gear Teeth



■ **This rotary dryer, 55 feet long and 84 inches in diameter, built by Standard Steel Corp., Los Angeles, has a cast tooth gear construction which eliminated machining of gear teeth. Gear measures 9 feet 3 inches in diameter, has 114 teeth, an 8-inch face, is bolted to a "T" ring and is cast of meehanite metal. Dryer will be used for drying bicarbonate of soda. Photo courtesy Meehanite Research Institute of America Inc., Pittsburgh**

Steelmaking Rises To New 1939 Peak

Business Trend Flatter But Auto Demand To Increase Shortly

MARKET IN TABLOID ★

Demand
Generally steady and widely diversified.

Prices
Concrete bars revised; scrap up further.

Production
Advances 2 points to 62 per cent.

■ STEEL demand is receiving strong support from a large number of consumers. The trend of business is tending to flatten, but ingot production advanced 2 points to 62 per cent last week, a new high for the year to date.

Market activity has made a highly favorable showing for a number of weeks, considering that automotive demand has been restricted both by the season and by labor disturbances. Needs of the motor industry will expand shortly, leading to expectations of sustained steel shipments at least into next quarter.

Scrap prices are strong, and, although deriving some strength from export demand, they lend a bullish aspect to the steelmaking outlook. STEEL'S scrap composite is up 37 cents to $15.33, highest since October, 1937.

Good business from a wide variety of miscellaneous users still comprises the foundation of steel demand. Sizable tonnages are appearing from other directions as well. Department of agriculture has ordered steel bins, involving 24,000 tons of galvanized sheets, for storage of corn on which government loans were made. Five cargo vessels placed by the maritime commission will take 16,000 tons of plates, shapes and other products.

The navy is inquiring for 6770 tons of battleship steel, mainly plates. For Grand Coulee dam, 4200 tons of plates and 2600 tons of shapes and castings have been awarded. Los Angeles water department requires 2600 tons of plates for large diameter pipe. Several proposed pipe lines, involving large tonnages, are approaching the bidding stage. Aircraft manufacturers, with backlogs swelled by recent government orders, are outlets for larger lots of special steels.

Several Weeks Required To Swell Auto Steel Movement

So far only small steel releases have followed the more peaceful situation in automotive labor. Preliminary work on new models is being pushed, but several more weeks must elapse before volume production is attained. Assemblies continued to sag last week, output being off 3375 units to 24,875, smallest for 1939 to date. Output of 13,790 units a year ago marked the low for 1938, but a sustained upturn did not start until six weeks later. Prompter recovery is indicated this season.

A heavy movement of structural shapes and concrete reinforcing bars is indicated for a number of weeks. Prospective business in the latter still is substantial, including a good number of private projects. A tapering in structural inquiries for major types of public works is not expected to be reflected in steel shipments generally before fall and has possibilities of being offset by heavier requirements elsewhere.

Tin plate operations are slow to decline, last week's rate of 68 per cent being only 2 points below the year's peak. Specifications are marked for a seasonal recession in coming weeks.

July Freight Car Orders Small; More In Prospect

Small gains are appearing in railroad steel demand for equipment repairs. Less than 1500 new freight cars are on inquiry but some larger purchases are under consideration. July car awards of only 110 brought the total for seven months to 9642, or 20 per cent more than the 8021 bought a year ago. The corresponding 1937 period saw 47,015 cars placed.

Pig iron shipments are heavier than a month ago, reflecting diversified improvement in foundry operations. Prices are steady, but indications of a change next quarter when books are opened, probably within two weeks, are lacking. Few intimations also are heard regarding finished steel quotations next period. Principal revision lately was on reinforcing bars, the former nominal base being reduced to place it more in line with the actual market. Deductions for quantity purchases replace old discounts to jobbers.

Steelmaking expanded in most districts last week to boost the national average to 22 points above the rate a year ago. Gains included 2 points to 52 per cent at Pittsburgh, 2 points to 43 in eastern Pennsylvania, 2 points to 70 in New England, 2½ points to 60½ at Buffalo, 7 points to 80 at Cleveland, 26 points to 57 at Cincinnati, 1 point to 55 at Youngstown and 7 points to 54½ at St. Louis. Detroit, unchanged at 64, will spurt sharply this week. Chicago held at 56, with Wheeling and Birmingham continuing at 79 and 70.

COMPOSITE MARKET AVERAGES

	Aug. 12	Aug. 5	July 29	One Month Ago July, 1939	Three Months Ago May, 1939	One Year Ago Aug., 1938	Five Years Ago Aug., 1934
Iron and Steel	$35.93	$35.90	$35.87	$35.82	$35.80	$36.50	$32.24
Finished Steel	55.60	55.60	55.60	55.62	56.00	57.20	54.00
Steelworks Scrap..	15.33	14.96	14.91	14.72	14.05	14.44	9.98

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel, hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished Material

	Aug. 12, 1939	July, 1939	May, 1939	Aug., 1938
Steel bars, Pittsburgh	2.15c	2.15c	2.20c	2.25c
Steel bars, Chicago	2.15	2.15	2.20	2.25
Steel bars, Philadelphia	2.47	2.47	2.52	2.57
Iron bars, Terre Haute, Ind.	2.05	2.05	2.10	2.15
Shapes, Pittsburgh	2.10	2.10	2.10	2.10
Shapes Philadelphia	2.215	2.22½	2.21½	2.21½
Shapes, Chicago	2.10	2.10	2.10	2.10
Plates, Pittsburgh	2.10	2.10	2.10	2.10
Plates, Philadelphia	2.15	2.15	2.15	2.15
Plates, Chicago	2.10	2.10	2.10	2.10
Sheets, hot-rolled, Pittsburgh	2.00	2.00	2.05	2.15
Sheets, cold-rolled, Pittsburgh	3.05	3.05	3.10	3.20
Sheets, No. 24 galv., Pittsburgh	3.50	3.50	3.50	3.50
Sheets, hot-rolled, Gary	2.00	2.00	2.03	2.15
Sheets, cold-rolled, Gary	3.05	3.05	3.08	3.20
Sheets, No. 24 galv., Gary	3.50	3.50	3.50	3.50
Bright bess., basic wire, Pitts.	2.60	2.60	2.60	2.60
Tin plate, per base box, Pitts.	$5.00	$5.00	$5.00	$5.35
Wire nails, Pittsburgh	2.45	2.40	2.45	2.45

Semifinished Material

Sheet bars, Pittsburgh, Chicago	$34.00	$34.00	$34.00	$34.00
Slabs, Pittsburgh, Chicago	34.00	34.00	34.00	34.00
Rerolling billets, Pittsburgh	34.00	34.00	34.00	34.00
Wire rods, No. 5 to $\frac{9}{32}$-inch, Pitts.	43.00	43.00	43.00	43.00

Pig Iron

	Aug. 12, 1939	July, 1939	May, 1939	Aug., 1938
Bessemer, del. Pittsburgh	$22.34	$22.34	$22.34	$21.34
Basic, Valley	20.50	20.50	20.50	19.50
Basic, eastern, del. Philadelphia	22.34	22.34	22.34	21.34
No. 2 foundry, Pittsburgh	22.21	22.21	22.21	21.21
No. 2, foundry, Chicago	21.00	21.00	21.00	20.00
Southern No. 2, Birmingham	17.38	17.38	17.38	16.38
Southern No. 2, del. Cincinnati	20.89	20.89	20.89	19.89
No. 2X, del. Phila. (differ. av.)	23.215	23.215	23.215	22.215
Malleable, Valley	21.00	21.00	21.00	20.00
Malleable, Chicago	21.00	21.00	21.00	20.00
Lake Sup., charcoal, del. Chicago	28.34	28.34	28.34	28.34
Gray forge, del. Pittsburgh	21.17	21.17	21.17	20.17
Ferromanganese, del. Pittsburgh	85.33	85.33	85.33	97.77

Scrap

Heavy melting steel, Pittsburgh	$16.25	$15.55	$14.55	$15.20
Heavy melt. steel, No. 2, E. Pa.	14.00	13.55	13.15	13.00
Heavy melting steel, Chicago	13.75	13.55	12.75	14.00
Rails for rolling, Chicago	17.75	17.75	17.25	18.25
Railroad steel specialties, Chicago	15.50	15.50	14.75	16.75

Coke

Connellsville, furnace, ovens	$3.75	$3.75	$3.75	$3.75
Connellsville, foundry, ovens	5.00	5.00	5.00	5.00
Chicago, by-product fdry., del.	10.50	10.50	10.50	10.50

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

Except when otherwise designated, prices are base, f.o.b. cars.

Sheet Steel

Hot Rolled

Pittsburgh	2.00c
Chicago, Gary	2.00c
Cleveland	2.00c
Detroit, del.	2.10c
Buffalo	2.00c
Sparrows Point, Md.	2.00c
New York, del.	2.24c
Philadelphia, del.	2.17c
Granite City, Ill.	2.10c
Middletown, O.	2.00c
Youngstown, O.	2.00c
Birmingham	2.00c
Pacific Coast points	2.50c

Cold Rolled

Pittsburgh	3.05c
Chicago, Gary	3.05c
Buffalo	3.05c
Cleveland	3.05c
Detroit, delivered	3.15c
Philadelphia, del.	3.37c
New York, del.	3.39c
Granite City, Ill.	3.15c
Middletown, O.	3.05c
Youngstown, O.	3.05c
Pacific Coast points	3.65c

Galvanized No. 24

Pittsburgh	3.50c
Chicago, Gary	3.50c
Buffalo	3.50c
Sparrows Point, Md.	3.50c
Philadelphia, del.	3.67c
New York, delivered	3.74c
Birmingham	3.50c
Granite City, Ill.	3.60c
Middletown, O.	3.50c
Youngstown, O.	3.50c
Pacific Coast points	4.00c

Black Plate, No. 29 and Lighter

Pittsburgh	3.05c
Chicago, Gary	3.05c
Granite City, Ill.	3.15c

Long Ternes No. 24 Unassorted

Pittsburgh, Gary	3.80c
Pacific Coast	4.50c

Enameling Sheets

	No. 10	No. 20
Pittsburgh	2.75c	3.35c
Chicago, Gary	2.75c	3.35c
Granite City, Ill.	2.85c	3.45c
Youngstown, O.	2.75c	3.35c
Cleveland	2.75c	3.35c
Middletown, O.	2.75c	3.35c
Pacific Coast	3.35c	3.95c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

	No. 302	No. 304
Bars	24.00	25.00
Plates	27.00	29.00
Sheets	34.00	36.00
Hot strip	21.50	23.50
Cold strip	28.00	30.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	18.50	19.00	22.50	27.50
Plates	21.50	22.00	25.50	30.50
Sheets	26.50	29.00	32.50	36.50
Hot strip	17.00	17.50	24.00	35.00
Cold stp.	22.00	22.50	32.00	52.00

Steel Plate

Pittsburgh	2.10c
New York, del.	2.19-2.29c
Philadelphia, del.	2.15c
Boston, delivered	2.42c
Buffalo, delivered	2.33c
Chicago or Gary	2.10c
Cleveland	2.10c
Birmingham	2.10c
Coatesville, Pa.	2.10c
Sparrows Point, Md.	2.10c
Claymont, Del.	2.10c
Youngstown	2.10c
Gulf ports	2.45c
Pacific Coast points	2.60c

Steel Floor Plates

Pittsburgh	3.35c
Chicago	3.35c
Gulf ports	3.70c
Pacific Coast ports	3.95c

Standard Shapes

Pittsburgh	2.10c
Philadelphia, del.	2.21¼c
New York, del.	2.27c
Boston, delivered	2.41c
Bethlehem	2.10c
Chicago	2.10c
Cleveland, del.	2.30c
Buffalo	2.10c
Gulf ports	2.45c
Birmingham	2.10c
St. Louis, del.	2.34c
Pacific Coast points	2.70c

Tin and Terne Plate

Tin Plate, Coke (base box)

Pittsburgh, Gary, Chicago	$5.00
Granite City, Ill.	5.10

Mfg. Terne Plate (base box)

Pittsburgh, Gary, Chicago	$4.30
Granite City, Ill.	4.40

Bars

Soft Steel

(*Base, 20 tons or over*)

Pittsburgh	2.15c
Chicago or Gary	2.15c
Duluth	2.25c
Birmingham	2.15c
Cleveland	2.15c
Buffalo	2.15c
Detroit, delivered	2.25c
Philadelphia, del.	2.47c
Boston, delivered	2.52c
New York, del.	2.49c
Gulf ports	2.50c
Pacific Coast points	2.75c

Rail Steel

(*Base, 15 tons or over*)

Pittsburgh	2.00c
Chicago or Gary	2.00c
Detroit, delivered	2.10c
Cleveland	2.00c

Buffalo	2.00c
Birmingham	2.00c
Gulf ports	2.35c
Pacific Coast points	2.60c

Iron

Chicago, Terre Haute	2.05c
Philadelphia	2.37c
Pittsburgh, refined	3.50-8.00c

Reinforcing

*New Billet Bars, Base**

Chicago, Gary, Buffalo, Cleve., Birm., Young., Sparrows Pt., Pitts.	1.90c
Gulf ports	2.25c
Pacific Coast ports	2.35c

*Rail Steel Bars, Base**

Pittsburgh, Gary Chicago, Buffalo, Cleveland, Birm.	1.80c
Gulf ports	2.15c
Pacific Coast ports	2.25c

**Base prices 20 cents less per 100 lbs. on billet bars, 15 cents less on rail steel, in lots of 20 tons or over of one size, in lengths of 30 feet or over, for shipment at one time to one destination.*

Wire Products

Pitts-Cleve.-Chicago-Birm. base per 100 lb. keg in carloads

Standard wire nails	$2.40
Cement coated nails	$2.40
(Per pound)	
Polished fence staples	2.40c
Galv. barbed wire, standard 12½ gage two-point hog, 80-rod spool $2.74; two-point cattle, 80-rod spool	$2.58
Annealed fence wire	2.90c
Galv. fence wire	3.30c
Woven wire fencing (base C. L. column)	67.00
Single loop bale ties, (base C. L. column)	56.00

To Manufacturing Trade

Base, Pitts. - Cleve. - Chicago-Birmingham (except spring wire)

Bright bess., basic wire	2.60c
Galvanized wire	2.65c
Spring wire	3.20c

Worcester, Mass., $2 higher on bright basic and spring wire.

Cut Nails

Carloads, Pittsburgh $3.60

Cold-Finished Bars

	Carbon	Alloy
Pittsburgh	2.65c	3.35c
Chicago	2.65c	3.35c
Gary, Ind.	2.65c	3.35c
Detroit	2.70c	*3.45c
Cleveland	2.65c	3.35c
Buffalo	2.65c	3.35c

* Delivered.

Alloy Bars (Hot)

(Base, 3 tons or over)

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem	2.70c
Detroit, delivered	2.80c

Alloy	S.A.E.	Diff.	Alloy	S.A.E.	Diff.
2000		0.35	3100		0.70
2100		0.75	3200		1.35
2300		1.55	3300		3.80
2500		2.25	3400		3.20

4100 0.15 to 0.25 Mo.	0.55
4600 0.20 to 0.30 Mo. 1.50-2.00 Ni.	1.10
5100 0.80-1.10 Cr.	0.45
5100 Cr. spring flats	0.15
6100 bars	1.20
6100 spring flats	0.85
Cr. N., Van.	1.50
Carbon Van.	0.85
9200 spring flats	0.15
9200 spring rounds, squares	0.40

Electric furnace up 50 cents.

Strip and Hoops

(Base, hot strip, 1 ton or over; cold, 3 tons or over)

Hot Strip, 12-inch and less

Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Middletown, Birmingham	2.00c
Detroit, del.	2.10c
Philadelphia, del.	2.32c
New York, del.	2.36c
Cooperage hoop, Youngs., Pitts.; Chicago, Birm.	2.10c

Cold strip, 0.25 carbon and under, Pittsburgh, Cleveland, Youngstown 2.80c; Chicago 2.90c; Detroit, del. 2.90c; Worcester, Mass. 3.00c

Carbon	Cleve., Pitts.
0.26—0.50	2.80c
0.51—0.75	4.30c
0.76—1.00	6.15c
Over 1.00	8.35c

Worcester, Mass. $4 higher.

Commodity Cold-Rolled Strip

Pitts.-Cleve.-Youngstown	2.95c
Detroit, del.	3.05c
Worcester, Mass.	3.95c

Lamp stock up 10 cents.

Rails, Fastenings

(Gross Tons)

Standard rails, mill	$40.00
Relay rails, Pittsburgh 20—100 lbs.	32.50-35.50
Light rails, billet qual., Pitts., Chicago, B'ham.	$40.00
Do., rerolling quality	39.00

Cents per pound

Angle bars, billet, mills.	2.70c
Do., axle steel	2.35c
Spikes, R. R. base	3.00c
Track bolts, base	4.15c
Car axles forged, Pitts., Chicago, Birmingham.	3.15c
Tie plates, base	2.15c

Base, light rails 25 to 60 lbs., 20 lbs., up $2; 16 lbs. up $4; 12 lbs. up $8; 8 lbs. up $10. Base railroad spikes 200 kegs or more; base plates 20 tons.

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade as per Dec. 1, 1932, lists, carloads 5% up; full containers additional 10%.

Carriage and Machine

½ x 6 and smaller	68.5 off
Do. larger, to 1-in.	66 off
Do. 1⅛ and larger	64 off
Tire bolts	52.5 off

Stove Bolts

In packages with nuts attached 72.5 off; in packages with nuts separate 72.5-12½ off; bulk 84 off on 15,000 of 3-inch and shorter, or 5000 over 3-in.

Step bolts	60 off
Elevator bolts	60 off
Plow bolts	68.5 off

Nuts

Semifinished hex.	U.S.S.	S.A.E.
6-inch and less	67	70
⅞-1-inch	64	65
1⅛ and larger	62	62

Hexagon Cap Screws

Upset, 1-in., smaller 67.5 off

Square Head Set Screws

Upset, 1-in., smaller 75.0 off

Headless set screws 70.0 off

Piling

Pitts., Chgo., Buffalo	2.40c
Gulf ports	2.75c

Rivets, Washers

Structural, Pittsburgh, Cleveland, Chicago 3.40c

⅞-inch and smaller, 11 and 12 63½ 54

Pitts., Chi., Cleve. ..65-10 off

Wrought washers, Pitts., Chi., Phila., to jobbers and large nut, bolt mfrs. l.c.l. $5.40; c.l. $5.75 off

Welded Iron, Steel Pipe

Base discounts on steel pipe. Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less on lap weld, 1 point less on butt weld. Chicago delivery 2½ and 1½ less, respectively. Wrought pipe, Pittsburgh base.

Butt Weld

In.	Blk.	Galv.
Steel		
½	63½	54
¾	66½	58
1—3	68½	60½
Iron		
¾	30	13
1—1¼	34	19
1½	38	21½
2	37½	21

Lap Weld

Steel		
2	61	52½
2½—3	64	55½
3½—6	66	57½
7 and 8	65	55½
9 and 10	64½	55
Iron		
2	30½	15
2½—3½	31½	17½
4	33½	21
4½—8	32½	20
9—12	28½	15

Line Pipe

Steel		
1 to 3, butt weld		67½
2, lap weld		60
2½ to 3, lap weld		63
3½ to 6, lap weld		65
7 and 8, lap weld		64
10-inch lap weld		63½
12-inch, lap weld		62½
Iron	Blk.	Galv.
¾ butt weld	25	7
1 and 1¾ butt weld	29	13
1½ butt weld	33	15½
2 butt weld	32½	15
1½ lap weld	23½	7
2 lap weld	25½	9
2½ to 3½ lap weld	26½	11½
4 lap weld	28½	15
4½ to 8 lap weld	27½	14
9 to 12 lap weld	23½	9

Boiler Tubes

Carloads minimum wall seamless steel boiler tubes, cut lengths 4 to 24 feet; f.o.b. Pittsburgh, base price per 100 feet subject to usual extras.

Lap Welded

Sizes	Gage	Steel	Charcoal Iron
1½" O.D.	13	$ 9.72	$23.71
1¾" O.D.	13	11.06	22.93
2" O.D.	13	12.38	19.35
2¼" O.D.	13	13.79	21.68
2¼" O.D.	12	15.16	.....
2½" O.D.	12	16.58	26.57
2¾" O.D.	12	17.54	29.00
3" O.D.	12	18.35	31.36
3½" O.D.	11	23.15	39.81
4" O.D.	10	28.66	49.90
5" O.D.	9	44.25	73.93
6" O.D.	7	68.14	.....

Seamless

Sizes	Gage	Hot Rolled	Cold Drawn
1" O.D.	13	$ 7.82	$ 9.01
1¼" O.D.	13	9.26	10.67
1½" O.D.	13	10.23	11.79
1¾" O.D.	13	11.64	13.42
2" O.D.	13	13.04	15.03
2¼" O.D.	13	14.54	16.76
2¼" O.D.	12	16.01	18.45
2½" O.D.	12	17.54	20.21
2¾" O.D.	12	18.59	21.42
3" O.D.	12	19.50	22.48
3½" O.D.	11	24.62	28.37
4" O.D.	10	30.54	35.20
4½" O.D.	10	37.35	43.04
5" O.D.	9	46.87	54.01
6" O.D.	7	71.96	82.93

Cast Iron Pipe

Class B Pipe—Per Net Ton

6-in., & over, Birm.	$42.00-43.00
4-in., Birmingham	45.00-46.00
4-in., Chicago	53.80-54.80
6-in. & over, Chicago	50.80-51.80
6-in. & over, east fdy.	46.00
Do., 4-in.	49.00

Class A Pipe $3 over Class B

Stnd. fitgs., Birm., base $100.00

Semifinished Steel

Rerolling Billets, Slabs

(Gross Tons)

Pittsburgh, Chicago, Gary, Cleve., Buffalo, Young., Birm., Sparrows Point	$34.00
Duluth (billets)	36.00
Detroit, delivered	36.00

Forging Quality Billets

Pitts., Chi., Gary, Cleve., Young., Buffalo, Birm.	40.00
Duluth	42.00

Sheet Bars

Pitts., Cleveland, Young., Sparrows Point, Buffalo, Canton, Chicago	34.00
Detroit, delivered	36.00

Wire Rods

Pitts., Cleveland, Chicago, Birmingham No. 5 to ⅜-inch incl.	43.00
Do., over ⅜ to 41/64-in.incl.	48.00

Worcester up $2; Galveston up $6; Pacific Coast up $9.

Skelp

Pitts., Chi., Youngstown, Coatesville, Sparrows Pt.	1.90c

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur.	$3.75
Connellsville, fdry.	4.75- 5.50
Connell. prem. fdry.	5.75- 6.25
New River fdry.	6.50- 6.75
Wise county fdry.	5.50- 5.75
Wise county fur.	4.50- 4.75

By-Product Foundry

Newark, N. J., del.	10.88-11.35
Chi., ov., outside del.	9.75
Chicago, del.	10.50
Terre Haute, del.	10.00
Milwaukee, ovens	10.50
New England, del.	12.50
St. Louis, del.	11.00-11.50
Birmingham, ovens	7.00
Indianapolis, del.	10.00
Cincinnati, del.	9.75
Cleveland, del.	10.30
Buffalo, del.	10.50
Detroit, del.	10.25
Philadelphia, del.	10.65

Coke By-Products

Spot, gal., freight allowed east of Omaha

Pure and 90% benzol	16.00c
Toluol, two degree	22.00c
Solvent naphtha	26.00c
Industrial xylol	26.00c

Per lb. f.o.b. Frankford and St. Louis

Phenol (200 lb. drums)	16.25c
Do. (450 lbs)	15.25c

Eastern Plants, per lb.

Naphthalene flakes, balls, bbls. to jobbers	5.75c

Per ton, bulk, f.o.b. port

Sulphate of ammonia	$28.00

Pig Iron

Delivered prices include switching charges only as noted. No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil. above 2.25 sil.; 50c diff. below 1.75 sil. Gross tons.

Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$22.00	$22.50	$21.50	$23.00
Birdsboro, Pa.	22.00	22.50	21.50	23.00
Birmingham, Ala.‡	17.38	.....	16.38	22.00
Buffalo	21.00	21.50	20.00	22.00
Chicago	21.00	21.00	20.50	21.50
Cleveland	21.00	21.00	20.50	21.50
Detroit	21.00	21.00	20.50	21.50
Duluth	21.50	21.50	.....	22.00
Erie, Pa.	21.00	21.50	20.50	22.00
Everett, Mass.	22.00	22.50	21.50	23.00
Granite City, Ill.	21.00	21.00	20.50	21.50
Hamilton, O.	21.00	21.00	20.50	.....
Neville Island, Pa.	21.00	21.00	20.50	21.50
Provo, Utah	19.00	.....	.....	.....
Sharpsville, Pa.	21.00	21.00	20.50	21.50
Sparrow's Point, Md.	22.00	.....	21.50	.....
Swedeland, Pa.	22.00	22.50	21.50	23.00
Toledo, O.	21.00	21.00	20.50	21.50
Youngstown, O.	21.00	21.00	20.50	21.50

‡Subject to 38 cents deduction for 0.70 per cent phosphorus or higher.

Delivered from Basing Points:				
Akron, O., from Cleveland	22.39	22.39	21.89	22.89
Baltimore from Birmingham	22.78	.....	21.66	.....
Boston from Birmingham	22.12	.....	.....	.....
Boston from Everett, Mass.	22.50	23.00	22.00	23.50
Boston from Buffalo	22.50	23.00	22.00	23.50
Brooklyn, N. Y., from Bethlehem	24.50	25.00	.....	.....
Canton, O., from Cleveland	22.39	22.39	21.89	22.89
Chicago from Birmingham	†21.22	.....	.....	.....
Cincinnati from Hamilton, O.	21.24	22.11	21.61	.....
Cincinnati from Birmingham	21.06	.....	20.06	.....
Cleveland from Birmingham	21.32	.....	20.82	.....
Mansfield, O., from Toledo, O.	22.94	22.94	22.44	22.44
Milwaukee from Chicago	22.10	22.10	21.60	22.60
Muskegon, Mich., from Chicago, Toledo or Detroit	24.19	24.19	23.69	24.69
Newark, N. J., from Birmingham	23.15	.....	.....	.....
Newark, N. J., from Bethlehem	23.53	24.03	.....	.....
Philadelphia from Birmingham	22.46	.....	21.96	.....
Philadelphia from Swedeland, Pa.	22.84	23.34	22.34	.....
Pittsburgh district from Neville Island	Neville base, plus 69c, 84c, and $1.24 freight.			
Saginaw, Mich., from Detroit	23.45	23.45	22.95	22.95
St. Louis, northern	21.50	21.50	21.00	.....
St. Louis from Birmingham	†21.12	.....	20.62	.....
St. Paul from Duluth	23.63	23.63	.....	24.13

†Over 0.70 phos.

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., $26.50, base; $27.74 delivered Philadelphia.

Gray Forge		Charcoal	
Valley furnace	$20.50	Lake Superior fur.	$25.00
Pitts. dist. fur	20.50	do., del. Chicago	28.34
		Lyles, Tenn.	23.50

†Silvery

Jackson county, O., base: 6-6.50 per cent $25.50; 6.51-7—$26.00; 7-7.50—$26.50; 7.51-8—$27.00; 8-8.50—$27.50; 8.51-9—$28.00; 9-9.50—$28.50; Buffalo, $1.25 higher.

Bessemer Ferrosilicon†

Jackson county, O., base; Prices are the same as for silveries, plus $1 a ton.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Manganese differentials in silvery iron and ferrosilicon, 2 to 3%, $1 per ton add. Each unit over 3%, add $1 per ton.

Refractories

Per 1000 f.o.b. Works, Net Prices

Fire Clay Brick

Super Quality

Pa., Mo., Ky.	$60.80

First Quality

Pa., Ill., Md., Mo., Ky.	47.50
Alabama, Georgia	47.50
New Jersey	52.50

Second Quality

Pa., Ill., Ky., Md., Mo.	42.75
Georgia, Alabama	34.20
New Jersey	49.00

Ohio

First quality	39.90
Intermediate	36.10
Second quality	31.35

Malleable Bung Brick

All bases	$56.05

Silica Brick

Pennsylvania	$47.50
Joliet, E. Chicago	55.10
Birmingham, Ala.	47.50

Ladle Brick

(Pa., O., W. Va., Mo.)

Dry press	$28.00
Wire cut	$26.00

Magnesite

Imported dead - burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	$45.00
Do. domestic	40.00
Do., f.o.b. Chewelah, Wash., net ton, bulk	22.00
net ton, bags	26.00
Quickset magnesite grains, f.o.b. Chewelah, Wash., net, bulk	22.00

Basic Brick

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick	$47.00
Chem. bonded chrome	47.00
Magnesite brick	67.00
Chem. bonded magnesite	57.00

Fluorspar

Washed gravel, duty pd., tide, net ton	$21.00-21.50
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all rail	18.00
Do. barge	19.00
No. 2 lump	18.00-19.00

Ferroalloy Prices

Ferromanganese, 78-82%, tidewater, duty pd. $80.00
Do., del. Pittsburgh 85.33

Spiegeleisen, 19-21% dom. Palmerton, Pa., spot 28.00
Do., 26-28%, Palmerton 33.00

Ferrosilicon, 50% freight allowed, c.l. 69.50
Do., ton lot 80.50
Do., 75 per cent 126.00
Spot, $5 a ton higher.

Silicoman, 2½ carbon 88.00
2% carbon, 93.00; 1% 103.00
Contract ton price $11 higher; spot $5 over contract.

Ferrotungsten, stand., lb. con. del. cars 1.60-1.65

Ferrovanadium, 35 to 40%, lb., cont. 2.70-2.80-2.90

Ferrophosphorus, gr. ton, c.l., 17-18% Rockdale, Tenn., basis, 18%, $3 unitage, 58.50; electrolytic, per ton, c. l., 23-26% f.o.b. Monsanto, Tenn., 24% $3 unitage 75.00

Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb., contained cr., del. carlots 10.50c
Do., ton lots 11.25c
Do., less-ton lots 11.50c
67-72% carloads, 2% carbon, per lb. contained

chrome	16.50c
Do., ton lots	17.25c
Do., less-ton lots	17.75c

	Carloads	Ton lots	Less ton
2% carb.	16.50c	17.25c	17.50c
1% carb.	17.50c	18.25c	18.50c
0.10% carb.	18.50c	19.25c	19.50c
0.20% carb.	19.50c	20.25c	20.50c

Spot ¼c higher

Ferromolybdenum, 55-65% molyb. cont., f.o.b. mill, lb. 0.95

Calcium molybdate, lb. molyb. cont., f.o.b. mill 0.80

Ferrotitanium, 40-45%, lb., con. ti., f.o.b. Niagara Falls, ton lots $1.23
Do., less-ton lots 1.25
20-25% carbon, 0.10 max., ton lots, lb. 1.35
Do, less-ton lots 1.40
Spot 5c higher

Ferrocolumbium, 50-60%, contract, lb. con. col., f.o.b. Niagara Falls $2.25
Do., less-ton lots 2.30
Spot is 10c higher

Technical molybdenum trioxide, 53 to 60% molybdenum, lb. molyb. cont., f.o.b. mill 0.80

Ferro-carbon-titanium, 15-18%, ti., 6-8% carb., carlots, contr., net ton $142.50
Do, spot 145.00
Do, contract, ton lots 145.00
Do, spot, ton lots 150.00
15-18% ti., 3-5% carbon, carlots, contr., net ton 157.50
Do, spot 160.00
Do, contract, ton lots 160.00
Do, spot, ton lots 165.00

Alsifer, contract carlots, f.o.b. Niagara Falls, lb. 7.50c
Do, ton lots 8.00c
Do, less-ton lots 8.50c
Spot ½c lb. higher

Chromium Briquets, contract, any quantity, freight allowed, lb. 7.25c
Do, spot carlots, bulk 7.50c
Do, ton lots 8.00c
Do., less-ton lots 8.25c

Tungsten Metal Powder, according to grade, spot shipment, 200-lb. drum lots, lb. $2.00
Do, smaller lots 2.10

Vanadium Pentoxide, contract, lb. contained $1.10
Do, spot 1.15

Chromium Metal, 98% cr., 0.50 carbon max., contract, lb. con. chrome 80.00c
Do, spot 85.00c
88% chrome, contract 79.00c
Do, spot 84.00c

Silicon Metal, 1% iron, contract, carlots, 2 x ⅛-in., lb. 14.00c
Do., 2% 12.50c
Spot ¼c higher

Silicon Briquets, contract carloads freight allowed, ton $69.50
Carload, spot 74.50
Less-ton lots, lb. 3.75c

Manganese Briquets, contract carloads, bulk freight allowed, lb. 4.50c
Ton lots 5.00c
Less-ton lots 5.25c
Spot ¼c higher

Zirconium Alloy, 12-15%, contract, carloads, gross ton $97.50
Do, spot 102.50

34-40%, contract, carloads, lb., alloy 14.00c
Do, ton lots 15.00c
Do, less-ton lots 16.00c
Spot ¼c higher

Molybdenum Powder, 99%, f.o.b. York, Pa. 200-lb. kegs, lb. $2.60
Do, 100-200 lb. lots 2.75
Do, under 100-lb. lots 3.00

Molybdenum Oxide Briquets, 48-52% molybdenum, per pound contained, f.o.b. producers' plant 80.00c

WAREHOUSE STEEL PRICES

Base Prices in Cents Per Pound, Delivered Locally, Subject to Prevailing Differentials

	Soft Bars	Bands	Hoops	Plates ¼-in. & Over	Structural Shapes	Floor Plates	Sheets: Hot Rolled	Sheets: Cold Rolled	Sheets: Galv. No. 24	Cold Rolled Strip	Cold Drawn Bars: Carbon	Cold Drawn Bars: S A E 2300	Cold Drawn Bars: S A E 3100
Boston	3.88	4.06	5.06	3.85	3.85	5.66	3.71	4.78	4.61	3.46	4.13	8.63	7.23
New York (Met.)	3.84	3.96	3.96	3.76	3.75	5.56	3.40	4.60	4.50	3.51	4.09	8.59	7.19
Philadelphia	3.60	3.60	4.10	3.40	3.40	5.00	3.40	4.55	4.28	3.51	4.06	8.56	7.16
Baltimore	3.70	3.85	3.80	3.55	3.55	5.00	3.55	4.90	5.05	....	4.05	....	....
Norfolk, Va.	3.90	4.00	....	3.75	3.75	5.20	3.75	....	5.40	....	4.15	....	....
Buffalo	3.35	3.82	3.82	3.62	3.40	5.25	3.35	4.40	4.40	3.42	3.75	8.15	6.75
Pittsburgh	3.35	3.60	3.60	3.40	3.40	5.00	3.35	....	4.50	3.35	3.65	8.35	6.95
Cleveland	3.25	3.50	3.50	3.40	3.58	5.18	3.35	4.55	4.62	3.20	3.75	8.15	6.75
Detroit	3.33	3.43	3.68	3.60	3.65	5.27	3.43	4.50	4.59	3.40	3.80	8.45	7.05
Cincinnati	3.60	3.67	3.67	3.65	3.68	5.28	3.42	....	4.57	3.45	4.00	8.50	7.10
Chicago	3.50	3.60	3.60	3.55	3.55	5.15	3.35	4.30	4.25	3.50	3.75	8.15	6.75
Twin Cities	3.75	3.85	3.85	3.80	3.80	5.40	3.60	4.95	4.50	3.83	4.34	8.84	7.44
Milwaukee	3.63	3.73	3.73	3.68	3.68	5.28	3.48	4.43	4.38	....	3.88	8.38	6.98
St. Louis	3.62	3.72	3.72	3.47	3.47	5.07	3.38	4.32	4.52	3.61	4.02	8.52	7.12
Kansas City	4.05	4.15	4.15	4.00	4.00	5.60	3.90	....	5.00	....	4.30	....	....
Memphis	3.90	4.00	4.00	3.95	3.95	5.71	3.75	....	5.00	....	4.31	....	....
Chattanooga	3.80	3.90	3.90	3.85	3.85	5.80	3.65	....	4.40	....	4.39	....	....
Tulsa, Okla.	4.54	4.64	4.64	4.41	4.41	6.01	4.32	....	5.39	....	4.79	....	....
Birmingham	3.50	3.60	3.60	3.55	3.55	5.88	3.35	....	4.85	....	4.43	....	....
New Orleans	3.85	4.65	4.65	3.80	3.80	5.75	4.10	....	4.60	5.00	5.10	....	....
Houston, Tex.	3.50	5.85	6.25	4.05	4.05	5.65	3.95	....	5.25	....	....	....	....
Seattle	3.90	4.10	5.45	3.85	3.95	5.75	3.80	6.50	5.00	....	5.60	....	....
Portland, Oreg.	4.00	4.40	6.10	4.00	4.00	5.50	3.95	6.50	4.75	....	5.85	....	....
Los Angeles	4.00	4.50	6.35	4.00	4.00	6.20	4.20	6.30	5.00	4.45	6.00	10.40	9.55
San Francisco	3.50	3.90	6.00	3.45	3.45	5.05	3.45	6.40	5.15	....	6.55	10.65	9.80

	S A E Hot-rolled Bars (Unannealed): 1035-1050	2300 Series	3100 Series	4100 Series	6100 Series
Boston	4.18	7.50	6.05	5.80	7.90
New York (Met.)	4.04	7.35	5.90	5.65	....
Philadelphia	3.85	7.31	5.86	5.61	7.71
Baltimore	3.85	....	....	....	....
Norfolk, Va.	....	....	....	....	....
Buffalo	3.55	7.10	5.65	5.40	7.50
Pittsburgh	3.40	7.35	5.95	5.50	7.60
Cleveland	3.30	7.30	5.85	5.85	7.70
Detroit	3.38	7.42	5.97	5.72	7.19
Cincinnati	3.65	7.44	5.99	5.74	7.84
Chicago	3.70	7.10	5.65	5.40	7.50
Twin Cities	3.95	7.45	6.00	6.09	8.19
Milwaukee	3.78	7.33	5.88	5.63	7.73
St. Louis	3.82	7.47	6.02	5.77	7.87
Seattle	5.65	....	7.80	7.65	8.45
Portland, Oreg.	5.70	....	7.80	7.65	8.50
Los Angeles	4.65	9.40	8.55	8.40	9.05
San Francisco	4.50	9.65	8.80	8.65	9.30

BASE QUANTITIES

Soft Bars, Bands, Hoops, Plates, Shapes, Floor Plates, Hot Rolled Sheets and SAE 1035-1050 Bars: Base, 400-1999 pounds, except 0-1999 pounds (hot rolled sheets only) in New York; 300-1999 pounds in Los Angeles; 0-299 pounds (hoops only) in San Francisco; 300-4999 pounds in Portland, Seattle; 400-14,999 pounds in Twin Cities; 400-3999 pounds in Birmingham.

Cold Rolled Sheets: Base, 400-1499 pounds in Chicago, Cincinnati, Cleveland, Detroit, New York and St. Louis; 450-3749 pounds in Boston; 500-1499 pounds in Buffalo; 1000-1999 pounds in Philadelphia; 300-4999 pounds in San Francisco and Portland; any quantity in Twin Cities.

Galvanized Sheets: Base, 0-1499 pounds in New York, Tulsa; 150-1499 pounds in Cleveland, Pittsburgh; 1-9 bundles in Baltimore, Norfolk; 1-6 bundles in Los Angeles; 300-4999 pounds in Portland, Seattle, San Francisco; 450-3749 pounds in Boston; 500-1499 pounds in Birmingham, Chicago, Cincinnati, Detroit, St. Louis; 1500 pounds and over in Chattanooga, Philadelphia; any quantity in Twin Cities.

Cold Rolled Strip: No base quantity; extras apply on lots of all size.

Cold Finished Bars: Base, 1000 pounds and over, except 0-299 pounds in San Francisco.

SAE Hot Rolled Alloy Bars: Base, 1000 pounds and over, except 0-4999 pounds in San Francisco; 0-1999 in Portland.

CURRENT IRON AND STEEL PRICES OF EUROPE

Dollars at Rates of Exchange, Aug. 10

Export Prices f. o. b. Port of Dispatch—

By Cable or Radio

	British gross tons U. K. ports £ s d	Quoted in dollars at current value	Continental Channe or North Sea ports, gross tons **Quoted in gold pounds sterling £ s d
Foundry, 2.50-3.00 Si.	$23.40 5 0 0	$18.32	2 3 0
Basic bessemer	....	19.59	2 6 0
Hematite, Phos. .03-.05	23.57 5 5 0*	.....	.....
Billets	$34.52 7 7 6	$38.34	4 10 0
Wire rods, No. 5 gage	53.24 11 7 6	43.67	5 2 6
Standard rails	$44.46 9 10 0	$48.99	5 15 0
Merchant bars	2.30c 11 0 0	1.81c to 1.90c	4 15 0 to 5 0 0
Structural shapes	2.09c 10 0 0	1.76c to 1.81c	4 12 6 to 4 15 0
Plates, †¼ in. or 5 mm.	2.29c 10 18 9	2.14c to 2.33c	5 12 6 to 6 2 6
Sheets, black, 24 gage or 0.5 mm.	2.72c 13 0 0	2.90c	7 12 6*
Sheets, gal., 24 ga., corr.	3.29c 15 15 0	3.52c	9 5 0
Bands and strips	2.56c 12 5 0	1.90c	5 0 0
Plain wire, base	4.08c 19 10 0	2.33c to 2.66c	6 2 6 to 7 0 0
Galvanized wire, base	4.86c 23 5 0	2.99c	7 17 6
Wire nails, base	....	2.66c to 2.76c	7 0 0 to 7 5 0
Tin plate, box 108 lbs.	$ 4.74 1 0 3	....	.....

British ferromanganese $80.00 delivered Atlantic seaboard duty-paid.

Domestic Prices at Works or Furnace—

Last Reported

	£ s d		French Francs		Belgian Francs		Reich Mark
Fdy. pig iron, Si. 2.5	$23.17	4 19 0(a)	$18.00	679.30	$17.00	500	$25.28 63
Basic bess. pig iron	21.65	4 12 6(a)	.....	....	.....	...	27.89 (b) 69.50
Furnace coke	5.38	1 4 2	5.96	225	6.87	202	7.62 19
Billets	34.52	7 7 6	27.27	1,029	29.24	860	38.73 96.50
Standard rails	1.99c	9 10 0	1.69c	1,405	2.06c	1,375	2.38c 132
Merchant bars	2.42c	11 12 0††	1.56c	1,304	1.65c	1,100	1.98c 110
Structural shapes	2.17c	10 8 0††	1.52c	1,268	1.65c	1,100	1.93c 107
Plates, †¼-in. or 5 mm.	2.29c	10 19 3††	1.98c	1,650	2.06c	1,375	2.29c 127
Sheets, black	3.08c	14 15 0§	2.35c	1,958‡	2.36c	1,575‡	2.59c 144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	3.61c	17 5 0	3.30c	2,750	4.05c	2,700	6.66c 370
Plain wire	4.08c	19 10 0	2.40c	2,000	2.48c	1,650	3.11c 173
Bands and strips	2.58c	12 7 0††	1.73c	1,444	1.95c	1,300	2.29c 127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel. (a) del. Middlesbrough. 5s rebate to approved customers. (b) hematite. °Close annealed. ††Rebate of 15s on certain conditions.

**Gold pound sterling carries a premium of 75 per cent over paper sterling.

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated; †indicates brokers prices

HEAVY MELTING STEEL

Birmingham, No. 1	†12.00
Bos. dock No. 1 exp.	14.00
New Eng. del. No. 1	13.50-13.75
Buffalo, No. 1	14.50-15.00
Buffalo, No. 2	12.50-13.00
Chicago, No. 1	13.50-14.00
Chicago, auto, no alloy	12.50-13.00
Chicago, No. 2 auto	10.50-11.00
Cincinnati, dealers	11.50-12.00
Cleveland, No. 1	14.50-15.00
Cleveland, No. 2	13.50-14.00
Detroit, No. 1	11.00-11.50
Detroit, No. 2	10.00-10.50
Eastern Pa., No. 1	16.50
Eastern Pa., No. 2	14.00-14.25
Federal, Ill.	11.50-12.00
Granite City, R. R.	12.00-12.50
Granite City, No. 2	11.00-11.50
Los Angeles, No. 1	12.50-13.00
Los Angeles, No. 2	11.50-12.00
L. A., No. 1 f.a.s.	14.50-15.00
L. A., No. 2 f.a.s.	13.00-13.50
N. Y. dock No. 1 exp.	12.50
Pitts., No. 1 (R. R.)	16.75-17.25
Pittsburgh, No. 1	16.00-16.50
Pittsburgh, No. 2	14.00-14.50
St. Louis, R. R.	12.00-12.50
St. Louis, No. 2	11.00-11.50
San Francisco, No. 1	13.00-13.50
Seattle, No. 1	11.00-12.00
Toronto, dlrs. No. 1	9.25- 9.75
Valleys, No. 1	15.00-15.50

COMPRESSED SHEETS

Chicago, factory	12.50-13.00
Chicago, dealers	11.00-11.50
Cincinnati, dealers	11.00-12.00
Cleveland	14.00-14.50
Detroit	12.50-13.00
E. Pa., new mat.	16.50
E. Pa., old mat.	12.50-13.00
Los Angeles	11.00-11.50
Pittsburgh	16.00-16.50
St. Louis	9.00- 9.50
Valleys	15.00-15.50

BUNDLED SHEETS

Buffalo, No. 1	12.75-13.25
Buffalo, No. 2	11.25-11.75
Cleveland	9.50-10.00
Los Angeles	14.00
Pittsburgh	14.50-15.00
St. Louis	7.00- 7.50
Toronto, dealers	8.00- 8.50

SHEET CLIPPINGS, LOOSE

Chicago	8.00- 8.50
Cincinnati, dealers	7.00- 7.50
Detroit	9.00- 9.50
†Los Angeles	3.75- 4.00
St. Louis	6.00- 6.50
Toronto, dealers	4.25- 4.75

BUSHELING

Buffalo, No. 1	12.50-13.00
Chicago, No. 1	12.50-13.00
Cincin., No. 1, deal.	7.00- 7.50
Cincinnati, No. 2	2.25- 2.75
Cleveland, No. 2	8.00- 8.50
Detroit, No. 1, new	11.25-11.75
Valleys, new, No. 1	14.25-14.75
Toronto, dealers	3.75- 4.25

MACHINE TURNINGS (Long)

Birmingham	†4.50- 5.00
Buffalo	7.00- 7.50
Chicago	7.00- 7.50
Cincinnati, dealers	4.50- 5.00
Cleveland, no alloy	7.50- 8.00
Detroit	6.00- 6.50
Eastern Pa.	9.50
Los Angeles	4.50- 5.00
New York	†3.50- 4.00
Pittsburgh	10.00-10.50
St. Louis	4.50- 5.00
Toronto, dealers	4.25- 4.75
Valleys	9.50-10.00

SHOVELING TURNINGS

Buffalo	9.00- 9.50
Cleveland	7.50- 8.00
Chicago	7.00- 7.50
Chicago, spcl. anal.	8.00- 8.50
Detroit	7.00- 7.50
Pitts., alloy-free	11.50-12.00

BORINGS AND TURNINGS

For Blast Furnace Use

Boston district	3.75
Buffalo	7.50- 8.00
Cincinnati, dealers	3.25- 3.75
Cleveland	8.25- 8.75
Eastern Pa.	6.50- 7.00
Detroit	6.00- 6.50
New York	†2.50- 3.00
Pittsburgh	8.75- 9.25
Toronto, dealers	3.50- 4.00

AXLE TURNINGS

Boston district	†7.50
Buffalo	11.00-11.50
Chicago, elec. fur.	13.50-14.00
East. Pa., elec. fur.	13.50-14.00
St. Louis	9.00- 9.50
Toronto	4.00- 4.25

CAST IRON BORINGS

Birmingham	†6.00- 6.50
Boston dist. chem.	†4.75
Buffalo	7.50- 8.00
Chicago	6.50- 7.00
Cincinnati, dealers	3.25- 3.75
Cleveland	8.25- 8.75
Detroit	6.00- 6.50
E. Pa., chemical	10.00-11.00
New York	†3.50- 4.00
St. Louis	2.50- 3.00
Toronto, dealers	3.75- 4.25

RAILROAD SPECIALTIES

Chicago	15.25-15.75

ANGLE BARS—STEEL

Chicago	15.50-16.00
St. Louis	13.00-13.50

SPRINGS

Buffalo	16.00-16.50
Chicago, coil	16.00-16.50
Chicago, leaf	15.00-15.50
Eastern Pa.	18.00
Pittsburgh	18.50-20.00
St. Louis	14.00-14.50

STEEL RAILS, SHORT

Birmingham	†12.00-12.50
Buffalo	18.00-18.50
Chicago (3 ft.)	16.00-16.50
Chicago (2 ft.)	16.50-17.00
Cincinnati, dealers	17.50-18.00
Detroit	17.50-18.00
Los Angeles	15.00-15.50
Pitts., 3 ft. and less	18.50-19.00
St. Louis, 2 ft. & less	15.50-16.00

STEEL RAILS, SCRAP

Boston district	†13.50-14.00
Buffalo	17.00-17.50
Chicago	13.50-14.00
Cleveland	16.50-17.00
Pittsburgh	17.00-17.50
St. Louis	13.50-14.00
Seattle	16.00

FROGS, SWITCHES

Chicago	13.50-14.00
St. Louis, cut	14.00-14.50

ARCH BARS, TRANSOMS

St. Louis	13.50-14.00

PIPE AND FLUES

Chicago, net	8.50- 9.00
Cincinnati, dealers	6.50- 7.00

RAILROAD GRATE BARS

Buffalo	10.00-10.50
Chicago, net	7.50- 8.00
Cincinnati, dealers	6.25- 6.75
Eastern Pa.	13.50-14.00
New York	†8.50- 9.00
St. Louis	8.00- 8.50

RAILROAD WROUGHT

Birmingham	†11.00-11.50
Boston district	†9.50-10.00
Eastern Pa., No. 1	16.00-16.50
St. Louis, No. 1	9.75-10.25
St. Louis, No. 2	12.00-12.50

FORGE FLASHINGS

Boston district	†7.50
Buffalo	12.25-12.75
Cleveland	11.00-11.50
Detroit	10.50-11.00
Los Angeles	9.00
Pittsburgh	14.00-14.50

FORGE SCRAP

Boston district	†6.50
Chicago, heavy	15.75-16.25

LOW PHOSPHORUS

Cleveland, crops	17.50-18.00
Eastern Pa., crops	18.50-19.00
Pitts., billet, bloom, slab crops	19.50-20.00

LOW PHOS. PUNCHINGS

Buffalo	16.00-16.50
Chicago	15.50-16.00
Cleveland	15.00-15.50
Eastern Pa., crops	17.50-18.00
Pittsburgh	17.50-18.00
Seattle	15.00

RAILS FOR ROLLING

5 feet and over

Birmingham	†14.00-15.00
Boston	15.00-15.50
Chicago	17.50-18.00
New York	†14.00-14.50
Eastern Pa.	17.00-17.50
St. Louis	16.00-16.50

STEEL CAR AXLES

Birmingham	†15.00-16.00
Boston district	†14.50
Chicago, net	17.00-17.50
Eastern Pa.	20.50-21.00
St. Louis	16.50-17.00

LOCOMOTIVE TIRES

Chicago (cut)	15.50-16.00
St. Louis, No. 1	12.25-12.75

SHAFTING

Boston district	†15.75-16.00
New York	†16.00-16.50
Eastern Pa.	21.00-22.00
St. Louis, 1¼-3¾"	15.50-16.00

CAR WHEELS

Birmingham	†13.50-14.00
Boston dist., iron	†10.00
Buffalo, steel	16.00-16.50
Chicago, iron	13.50-14.00
Chicago, rolled steel	14.50-15.00
Cincin., iron, deal.	13.50-14.00
Eastern Pa., iron	16.50-17.00
Eastern Pa., steel	18.00
Pittsburgh, iron	15.25-15.75
Pittsburgh, steel	18.75-19.25
St. Louis, iron	14.75-15.25
St. Louis, iron	14.00-14.50

NO. 1 CAST SCRAP

Birmingham	†13.00-13.50
Boston, No. 1 mach.	†11.00-11.50
N. Eng. del. No. 2	12.00-12.50
N. Eng. del. textile	12.50-13.00
Buffalo, cupola	14.00-14.50
Buffalo, mach.	15.50-16.00
Chicago, agri. net	9.50-10.00
Chicago, auto net	12.50-13.00
Chicago, railroad net	11.00-11.50
Chicago, mach. net	12.00-12.50
Cincin., mach. deal.	12.25-12.75
Cleveland, mach.	17.00-17.50
Detroit, cupola, net	13.00-13.50
Eastern Pa., cupola	16.50-17.00
E. Pa., mixed yard	13.50-14.00
Los Angeles, net	13.50-14.00
Pittsburgh, cupola	15.50-16.00
San Francisco, del.	13.50-14.00
Seattle	12.50-13.50
St. Louis, cupola	12.50-13.00
St. Louis, agri. mach.	14.00-14.50
St. L., No. 1 mach.	14.00-14.50
Toronto, No. 1, mach., net	12.00-12.50

HEAVY CAST

Boston dist. break.	†10.25-10.50
New England, del.	12.50-13.00
Buffalo, break.	11.50-12.00
Cleveland, break, net	13.00-13.50
Detroit, auto net	13.00-13.50
Detroit, break	10.50-11.00
Eastern Pa.	15.50-16.00
Los Ang., auto, net.	13.50
New York, break.	†11.00-11.50
Pittsburgh, break	13.00-13.50

STOVE PLATE

Birmingham	†7.50- 8.00
Boston district	†8.00- 8.25
Buffalo	11.50-12.00
Chicago, net	7.75-8.25
Cincinnati, dealers	6.25- 6.75
Detroit, net	7.00- 7.50
Eastern Pa.	13.50-14.00
New York, fdy.	†10.00-10.50
St. Louis	7.50- 8.00
Toronto dealers, net	6.50- 7.00

MALLEABLE

Birmingham, R. R.	†10.50-11.00
New England, del.	11.50-12.50
Buffalo	14.00-14.50
Chicago, R. R.	15.00-15.50
Cincin., agri., deal.	11.00-11.50
Cleveland, rail	15.50-16.00
Eastern Pa., R. R.	16.00-17.00
Los Angeles	17.50-18.00
Pittsburgh, rail	17.00-17.50
St. Louis, R. R.	12.50-13.00

Iron Ore

Lake Superior Ore

Gross ton, 51½ %

Lower Lake Ports

Old range bessemer	$5.25
Mesabi nonbessemer	4.95
High phosphorus	4.85
Mesabi bessemer	5.10
Old range nonbessemer	5.10

Eastern Local Ore

Cents, unit, del. E. Pa.

Foundry and basic 56.63% con.	9.00-9.25
Cop.-free low phos. 58-60%	nominal

Foreign Ore

Cents per unit, c.i.f. Atlantic

Foreign manganiferous ore, 45.55% iron, 6-10% man. nom.	12.00
No. Afr. low phos.	12.00
Swedish low phos.	12.00
Spanish No. Africa basic, 50 to 60% nom.	11.00
Tungsten, short ton unit, duty pd. nom.	18.50-19.00
N. F., fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	$23.00-24.00
Molybdenum ores sulphide, per lb. molybdenum contained, f.o.b. mill	0.75

Manganese Ore

Prices not including duty, cents per unit cargo lots.

Caucasian, 50-52% nom.	29.00
So. African, 50-52% nom.	29.00
Indian, 49-50%	27.00-28.00

Sheets, Strip

Sheet & Strip Prices, Page 76, 77

Pittsburgh—Automotive releases are beginning to appear in small lots. General Motors is calling for shipments to some divisions, although there will be some delay in reaching large volume assemblies. Releases on fender stock have been received in fair quantity, augmenting earlier steel requisitions for small parts. Sheet mill operations are estimated at 60 per cent, with strip production near 50. Galvanized sheet output is higher at slightly above 60.

Cleveland — Sheet and strip releases from the automotive industry were somewhat lighter the past week. This is temporary, resulting partly from the seasonal ebb in assemblies, and the trend will be upward shortly. Specifications elsewhere are fairly heavy as mills press for completion of low-price orders by Sept. 30. Consumption the past 90 days has exceeded expectations and buyers' inventories are not being swelled unduly.

Chicago—Sheet and strip orders are slightly heavier, the improvement coming from small miscellaneous users principally. Automotive specifying is increasing gradually but has yet to reach the large volume looked for within the next few weeks. Prices are steady on new business.

Boston — Sheet buying is light, but releases continue heavy. Mills are refusing extensions on low-price contracts and the small amount of new business booked takes firm prices. Mills are attempting to clear low-priced specifications by the end of this quarter but expect some tonnage will go over into the next period. Narrow cold strip buying has gained, notably miscellaneous demand for specialties. Automobile accessory demand has improved. Prices are firm and finishing operations in re-rolling departments are up an additional few points. Hot strip is also slightly more active.

New York—Sheet consumption is better than expected, and sellers are encouraged by prospects for completing shipments of low-price business from the general trade by the end of this quarter. Principal releases are from the building trades and makers of household appliances. August business is expected to be close to the July volume. Prices are reasonably steady.

Cold strip buying, notably specialties, shows additional improvement, including more specifications from the automotive trade. Miscellaneous demand is up and well diversified with prices firmer on new business. Finishing operations are higher, some re-rollers operating at 70-75 per cent.

Buffalo—Releases against previous commitments as well as new business are heavier. The latter is mostly small lots from miscellaneous users. Production is gaining despite slow automotive demand, although larger motor orders are expected the next few weeks.

Cincinnati—Sheet production is close to 60 per cent, although demand has fallen a few points below this level. Recent lag in automotive specifications is expected to be only temporary. Prices are firmer.

St. Louis—Sheet production has been increased to accommodate heavier specifications. New business is up moderately, particularly in lighter gages of galvanized. Enameling stock is moving better, but automotive strip releases are slow.

Philadelphia—Department of agriculture, Washington, has ordered 24,-

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(Formerly Pennsylvania Lubricating Co.)

New York • Chicago • Detroit • St. Louis

LUBRICANTS FOR THE STEEL INDUSTRY SINCE 1885

500 circular steel bins taking 24,000 tons of galvanized sheets. These will be used for storing shelled corn on which government loans were made. Butler Mfg. Co., Kansas City, Mo., will furnish 11,500 bins. Bids were asked on 30,666, indicating additional tonnage will be required. Automotive sheet releases are expected within the next few days.

Birmingham, Ala.—The local sheet mill is operating close to 80 per cent. Strip output shows some increase as the cotton season nears.

Plates

Plate Prices, Page 76

Cleveland — Chesapeake & Ohio shortly is expected to distribute orders for 900 tons of various steel products for car repairs. Miscellaneous and structural needs are providing a fair amount of business.

Chicago—Plate business is steady and fairly active. Prices show less irregularity than formerly. Line pipe and shipbuilding have been prominent sources of demand lately. Prospective business includes requirements for 800 freight cars for the Chicago & North Western railroad.

Boston—Plate demand, except for shipyard needs, lags, with boiler, structural and railroad shop releases in scattered single car lots only. Some fair inquiries for floor plates are out, however. A dam project also takes a substantial volume of wrought iron plates for fender work. Prices on quality material are firm, but shading continues on medium black.

New York—Outlook for plate demand is more promising, with some revival in oil company inquiry and railroad specifications. The latter are principally for repairs, although more interest is being shown in new equipment. Prospective business includes 5000 cars for the New York Central, now under consideration but not yet on inquiry. United States maritime commission has awarded Tampa Shipbuilding & Engineering Co. a $9,072,150 contract to build five cargo ships.

Philadelphia—Eastern plate producers will figure on requirements for five cargo vessels, each taking 2400 tons of plates and 800 tons of other products, just placed by the maritime commission. The navy takes bids Aug. 24 on 4140 tons of high tensile plates, shapes and strip and 2630 tons of medium steel plates for the battleships IOWA and NEW JERSEY now under construction at Brooklyn and Philadelphia. The Chester, Pa., interest will place 4500 tons of plates for a tanker booked recently for Texas Co. Some maintenance material is being ordered by western railroads but little by eastern roads. Prices are steadier.

Birmingham, Ala.—Plate tonnage is holding up remarkably well, some going into specialized construction, and shipbuilding at Pascagoula, Miss., accounting for the major portion at the moment.

Seattle—General inquiry is slow and shops have few orders in hand. Largest award in several months, about 4200 tons, went to American Bridge Co. for 11 drum gates for the Coulee dam spillway. Commercial Iron Works, Portland, will build a 92-foot tug for the Columbia River Towing Co. involving 100 tons or more.

San Francisco — Consolidated Steel Corp., Los Angeles, is reported to be in line for 6720 tons of plates for four vessels for the United States maritime commission. Bids have just been opened on reinforced concrete or welded steel pipe for the Mono Craters tunnel and Grant Lake reservoir for the water

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and power department, Los Angeles. Approximately 2600 tons of plates are involved for 12,706 feet of 103-inch by 5/16-inch pipe, if awarded on the welded steel pipe basis.

Plate Contracts Placed

4200 tons, eleven drum gates for Coulee dam; general contract to American Bridge Co.

3175 tons, division I, Lake Erie water project, Toledo, O., to Biggs Boiler Works Co., Akron, O.

250 tons, 1,000,000-gallon tank, Metropolitan water district, California, to Pacific Iron & Steel Co. Ltd., Los Angeles; previously noted as involving 125 tons.

180 tons, three storage tanks, Shell Oil Co., Plattesburg, 95 tons to Buffalo Tank Co., Buffalo, and 85 tons to Chicago Bridge & Iron Co., Chicago.

155 tons, 250,000-gallon tank, state prison, Chino, Calif., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

125 tons, outlet pipes, Wickiup dam, Oreg.; C. J. Montag & Sons, Roseburg, Oreg., general contractor; materials furnished by bureau.

120 tons, storage tank, Meeker Coal Co., Norwalk, Conn., to Norwalk Tank Co., that city.

100 tons, reinforcing plates for pipe, United States engineer's office, Wiota, Mont., to Alan Wood Steel Co., Conshohocken, Pa.

100 tons, standpipe, Brookfield, Mass., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

Unstated tonnage, $396,454, lighthouse tender, bureau of lighthouses, Washington; construction awarded to John Mathis Co., Camden, N. J.

Plate Contracts Pending

2600 tons, 103-inch by 5/16-inch welded steel pipe, Mono Craters tunnel and Grant Lake reservoir, for water and power department, Los Angeles, specification 2952; bids opened.

1000 tons, filter plant basins, sections E and F, New Britain, Conn.; bids Aug. 16.

100 tons or more, 92-foot tug for Columbia River Towing Co.; Commercial Iron Works, Portland, general contractor.

Unstated, 7000 foot, 24-26-inch pipe line for Leavenworth, Wash., fish hatchery; bids soon to reclamation bureau.

Bars

Bar Prices, Page 76

Chicago—Bar demand is heavier, improvement being principally in smaller sizes. Miscellaneous consumers still furnish the bulk of demand, although automotive needs are growing and are expected to be fairly heavy within the next three weeks.

Philadelphia—Mills are resisting a strong effort on the part of warehouses to cancel new bar extras, and it is believed the new schedule will prevail, especially if business expands as anticipated. No real test is expected before Oct. 1. Demand is holding well.

Cleveland — Bars continue active despite absence of further pickup in automotive demand. Business is receiving better than normal support from miscellaneous users, but shortly will reflect expanding operations of motor car plants.

Boston—Merchant bar buying by jobbers has improved, the same applying to most other bar finishes. New extras on lots under 20 tons are thought to have driven in some tonnage. The larger direct buyers for industrial use have welcomed the change in extras.

Birmingham, Ala. — Bars have proved one of the most stable items, a large tonnage having materialized for highway construction, while there is some improvement in demand from producers of agricultural implements.

Buffalo — Bar activity continues to improve, with inquiries heavier. In addition to a better call for reinforcing material, automotive releases also are increasing and miscellaneous buying is sustained.

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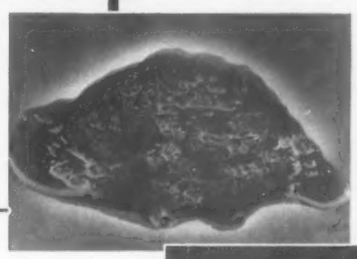
COMPARE:
This sludge from low cost heavy fuel oil, with high B.T.U. value, approximately 180,000 B.T.U. per gallon, is utilized by "Salem" equipment.



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TO satisfactorily utilize all of the combustibles in the lower priced lower grades of heavy oils has been a stumbling block.

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Pipe

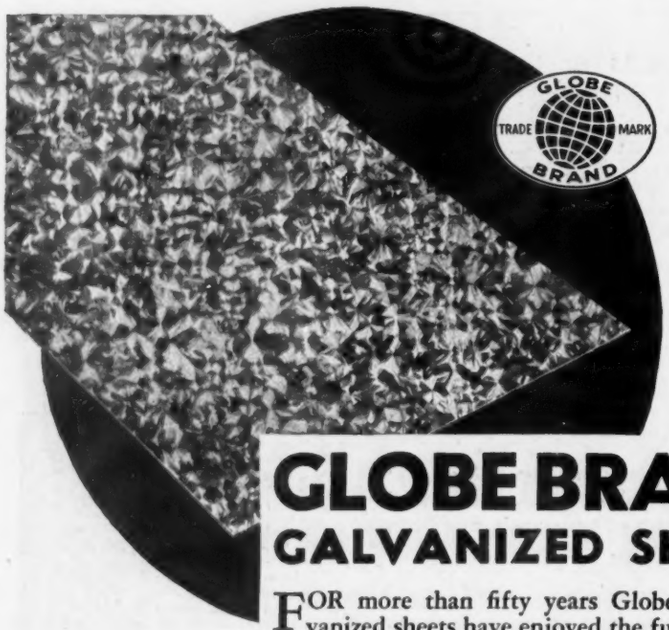
Pipe Prices, Page 77

Cleveland — Pipe continues active despite relatively slow demand from oil well drillers. The latter is partly offset by fairly heavy production of line pipe, which market in recent months has furnished more orders and inquiries than in several years. Northern Natural Gas Co., Omaha, Nebr., is financing its proposed line from Sioux City, Iowa, to Minneapolis, about 250 miles.

Boston—Cast pipe releases are active and buying, mostly in small lots, is maintained. The district foundry continues at top schedule. Utilities are buying little. Slight improvement in demand for wrought iron pipe is noted, volume this year being well above last. The same applies to merchant steel pipe, resale prices for which are mixed and weak, although mill prices are firm.

New York—Merchant pipe demand continues fairly active, with a peak expected in late September and early October. Outstanding in construction needs are several hundred tons for the James Madison high school, Brooklyn, and 1500 tons of 12¾-inch for piling for sections of the belt highway. Resale prices tend to strengthen. Cast pipe is slightly less active, but nearby utilities are buying steadily. Releases are sustained, supporting foundry operations despite a decrease in backlogs.

San Francisco — Demand for cast iron pipe is light and recent awards totaled only 535 tons. This brought the year's aggregate to 21,576 tons, compared with 18,516 tons for the same period a year ago. Long Beach, Calif., divided 793 tons of plain end seamless pipe between Youngstown Sheet & Tube Co., Jones & Laughlin Steel Corp. and Wheeling Steel Corp.



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ANDREWS PRODUCTS IN CARBON AND ALLOY STEEL: Blooms • Forging Billets • Re-rolling Billets • Slabs • Universal Mill Plates • Sheet Bars

Cast Pipe Placed

300 tons, 10 and 12-inch, Lunenberg, Mass., to United States Pipe & Foundry Co., Burlington, N. J. through procurement division, treasury department, Boston.

118 tons, 6 and 8-inch, Walnut Park mutual water district, Walnut Park, Calif., to unnamed interest.

Cast Pipe Pending

550 tons, McChord Field, Washington; bids in to army quartermaster.

200 tons, 14 and 16-inch, Yonkers, N. Y.; through contractor.

183 tons, 6-inch, for Spokane, Wash.; United States Pipe & Foundry Co., Burlington, N. J., low.

130 tons, 20-inch, procurement division, treasury department, Newark, N. J.

Unstated, 9500 feet of 10-inch and other items, for Warm Springs, Mont.; bids at Helena, Aug. 22.

Steel Pipe Placed

793 tons, plain and seamless pipe, Long Beach, Calif., divided between Youngstown Sheet & Tube Co., Jones & Laughlin Steel Corp. and Wheeling Steel Corp.

Steel Pipe Pending

1500 tons, approximately, 12¾-inch outside diameter seamless pipe, piling for three sections of municipal belt highway, between Whitestone Bridge and the Rockaways, New York, pending; Federal Construction Co. is low on one section, about 510 tons, Elmhurst Contracting Co., low on another, 500 tons; and general contractors' bids are pending on still another, about 500 tons.

Rails, Cars

Track Material Prices, Page 77

With 110 freight cars placed, July showed next to the smallest total this year, only January with three cars placed, being lower. Prospects

are for better placement in August, with Chicago & North Western reviving its inquiry for 800 and the Virginian opening bids for 500 or parts for repair of that number. New York, New Haven & Hartford has not yet closed on 25 cabooses and 150 to 300 subway cars for New York will be bid this month.

In absence of help from the government railroads are making other arrangements for financing necessary purchases. In addition to the expected inquiry for 5000 cars for New York Central other lists are said to be under consideration.

Comparisons in car buying are as follows:

	1939	1938	1937	1936
Jan.....	3	25	17,806	2,050
Feb.....	2,259	109	4,972	6,900
March....	800	680	8,155	632
April.....	3,095	15	9,772	4,427
May.....	2,051	6,014	4,732	8,900
June	1,324	1,178	548	5,200
July.....	110	0	1,030	7,229
7 mos.....	9,642	8,021	47,015	35,338
Aug.....	.....	182	1,475	225
Sept.....	.....	1,750	1,216	1,750
Oct.....	.....	2,537	1,355	2,210
Nov.....	.....	1,232	275	1,550
Dec.....	.....	2,581	275	23,450
Total...	.....	16,303	51,611	64,523

Locomotives Placed

Maine Central, two diesel locomotives, to American Locomotive Co., New York.

Locomotives Pending

Panama Railways, ten diesel or steam locomotives; bids Aug. 22 at Washington.

Rail Orders Pending

Bureau of reclamation, Denver, 1856 tons relaying rails, and substantial miscellaneous tonnage of accessories, bids Aug. 18.

Southern Pacific, 2570 tons and accessories for Central Valley relocation; Colorado Fuel & Iron Corp., low.

Car Orders Pending

Chicago & North Western, 500 seventy-ton hoppers and 300 box cars; inquiry reissued.

Navy, one or two 50-ton box cars for Fort Mifflin, N. J.

Buses Booked

American Car & Foundry Motors Co., New York: Thirty coaches for Eastern Massachusetts Street Railway Co., Boston; makes total of 315 such buses for this company.

Wire

Wire Prices, Page 77

Cleveland — Business continues fairly active, with the outlook favorable in both merchant products and manufacturers' wire. While there was some nail buying by distributors to avoid higher extras now effective, this demand was limited by the fact not all sizes were advanced. Automotive needs are counted on to bolster manufacturers' wire shipments during coming weeks.

Boston — Slight improvement in wire buying is well distributed. Merchant goods lag, due to heavy coverage earlier this year by most distributors although new nail extras drove in some orders. Demand for wire rods has gained mildly. Wire rope volume is only fair. Finishing department schedules are up a few points. Prices are firmer on practically all products.

New York — Heavier buying and releases by the automotive trade is accompanied by a well diversified improvement in miscellaneous demand from manufacturing consumers. Spring wire specifications continue to come in freely at steady prices. Flat wire demand is unchanged, but rope and some heavier goods have shared the gains. Finishing mill operations are well above July.

Birmingham, Ala. — Substantial

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ENGLAND Burton, Griffiths & Co., Ltd.
ERIE BUILDS Dependable HAMMERS

business in wire products is appearing, production being estimated at somewhat better than 70 per cent, with considerable direct-to-farm movement.

Shapes

Structural Shape Prices, Page 76

Pittsburgh—Shape orders and releases are steady. Government-financed work is most prominent, although private jobs are fairly numerous. Prices on mill quantities of plain shapes are holding in most sections, but some weakness is noted out of warehouse.

Cleveland — Fair activity in plain shapes is derived principally from specifications against contracts, some of which were entered 30 days or more ago. Inquiries and orders are small individually, pointing to a letdown in shipments at a later date unless heavier business is forthcoming. Pending orders include 800 tons of piling for the Toledo, O., waterworks.

Chicago—Structural demand is slightly heavier, although large inquiries are less numerous than during early summer. Largest pending job, except for Chicago subway work, involves 1300 tons for Fort Peck dam.

Boston — Structural contracts are few and generally small. Pending work is not impressive except 6500 tons for an insurance building in Boston. Bridge activity is the lowest in months. Plain structural material is firmer but not subject to much test.

New York—Although the building season is well advanced, structural awards have spurted. Outstanding contract is 2345 tons for power line towers for Commonwealth Edison Co. in Illinois. Considerable bridge work is active.

Philadelphia — A few more private jobs are being figured giving the market a better appearance. Recent awards total several thousand tons. Mill prices are steadier but competition among fabricators is keen.

Seattle—American Bridge Co. has been awarded contract for 11 drum gates, 25 x 135 feet, low bidder at $609,360, for Coulee dam spillway, 2600 tons, including 500 tons steel castings. Reclamation Bureau has awarded general contract to C. J. Montag & Son, Roseburg, Oreg. for outlet works, Wickiup dam, Oreg., 194 tons.

San Francisco — Structural lettings, largest in over two months, aggregated 4215 tons, bringing the total to date to 77,084 tons, compared with 82,151 tons for the corresponding period in 1938. Pending business exceeds 8800 tons. Bids have been opened on 1386 tons of bearing piles for the improvement of the Los Angeles river channel, Los Angeles.

Shape Contracts Placed

2600 tons, including 500 tons steel castings, 11 drum gates for Coulee dam spillway, to American Bridge Co.

2345 tons, 16 miles of towers, Commonwealth Edison Co., Powerton, Ill., to Blaw-Knox Co., Pittsburgh.

920 tons, Cranston Heights viaduct, near

Shape Awards Compared

	Tons
Week ended Aug. 12	17,975
Week ended Aug. 5	16,866
Week ended July 29	23,176
This week, 1938	26,940
Weekly average, year, 1938	21,568
Weekly average, 1939	22,266
Weekly average, July	23,778
Total to date, 1938	541,886
Total to date, 1939	712,534

Includes awards of 100 tons or more.

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Reduced costs, savings in time, increased efficiency—that's why so many manufacturers of refrigerating and air-conditioning equipment use Hackney's designing, engineering and manufacturing facilities. These manufacturers find that the easiest and most economical way to secure precision-made shapes and shells is to call on Hackney.

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DEEP DRAWN SHELLS AND SHAPES

Marshallton, Del., to Bethlehem Steel Co., Bethlehem, Pa.

860 tons, bridge over Delaware river, Shohola, Pa., for state, to Bethlehem Steel Co., Bethlehem, Pa.

850 tons, state bridge FA-141, section 110-F, Galt, Ill., to Bethlehem Steel Co., Bethlehem, Pa.

665 tons, contract MS-39-8, shore parkway, Brooklyn, N. Y., to Harris Structural Steel Co., New York.

650 tons, warehouse, Fulton, N. Y., for Peter Cailler Kohler Swiss Chocolate Co., to Bethlehem Steel Co., Bethlehem, Pa.

645 tons, viaduct extension for department of roads and irrigation, Tenth street, Omaha, Nebr., to Omaha Steel Works, that city.

610 tons, driveaway building, Lincoln plant, Ford Motor Co., Detroit, to Whitehead & Kales Co., that city.

600 tons, manufacturing building, Firestone Steel Products Co., Riverview, Mich., to Whitehead & Kales Co., Detroit.

525 tons, highway bridge, section 2-C, Pennsylvania turnpike, Westmoreland county, Pennsylvania, to Fort Pitt Bridge Works, Pittsburgh.

485 tons, bridge, Mill Creek township, Erie county, Pennsylvania, to American Bridge Co., Pittsburgh.

446 tons, state highway bridge, Independence, Kans., to J. B. Klein Iron & Foundry Co., Oklahoma City, Okla.

385 tons, bridge A-64, Cajon, Calif., Atchison, Topeka & Santa Fe railroad, to American Bridge Co., Pittsburgh.

365 tons, state bridge over Ontonagon river, Ontonagon, Mich., to Bethlehem Steel Co., Bethlehem, Pa.

365 tons, vocational high school, McKeesport, Pa., to Keystone Engineering Co., Pittsburgh.

360 tons two shop buildings, Textile Machine Co., Wyomissing, Pa., to Reading Steel Products Co., Reading, Pa.

350 tons, industrial building No. 3, for Federal Prison Industries Inc., Lewisburg, Pa., to Belmont Iron Works, Eddystone, Pa.

300 tons, additional seating in baseball park for Cincinnati Baseball Club Co., to American Bridge Co., Pittsburgh.

272 tons, Wickiup and Crane Prairie dams, Oregon state; general contracts placed; materials to be furnished by reclamation bureau.

240 tons, service building, Rochester Gas & Electric Corp., Rochester, N. Y., to F. L. Heughes & Co., Rochester.

240 tons, dynamometer building, Chrysler Corp., Highland Park, Mich., to Whitehead & Kales, Detroit.

215 tons, bridge, Santa Ana river, Colton, Calif., to Minneapolis-Moline Power Implement Co., Minneapolis.

209 tons, state highway bridge, La Crescent, Minn., to Lakeside Bridge & Steel Co., Milwaukee.

200 tons, state bridge FA-142, section 3-VF, Petersburg, Ill., to American Bridge Co., Pittsburgh.

190 tons, Horn & Hardart building, Fifty-second and Market streets, Philadelphia, to Bethlehem Fabricators, Bethlehem, Pa.

190 tons, Central high school addition, Rochester, Minn., to Lakeside Bridge & Steel Co., Milwaukee.

175 tons, bridge, FAGS-86-A, Tarrant, county, Texas, to Mosher Steel Co., Houston, Tex.

165 tons, bridge, Merritt parkway, route 8, Stratford, Conn., to American Bridge Co., Pittsburgh.

165 tons, dike, Connecticut river, Holyoke, Mass., to Phillips & Davies Inc., Kenton, O.

160 tons, three buildings, Standard Brands Inc., Peoria, Ill., to Hansell-Elcock Co., Chicago.

155 tons, freight house and office building, New Haven, Conn., New York, New Haven & Hartford railroad, to Lehigh Structural Steel Co., Allentown, Pa.

150 tons, beam spans, various locations, Great Northern railroad, to American Bridge Co., Pittsburgh.

145 tons, slats for conveyor chain, Ford Motor Co., Dearborn, Mich., to unnamed fabricator.

125 tons, power station addition, Philadelphia Electric Co., Chester, Pa., to Belmont Iron Works, Philadelphia.

120 tons, building, L. W. Besse estate, Springfield, Mass., to Haarmann Steel Co., Holyoke, Mass.

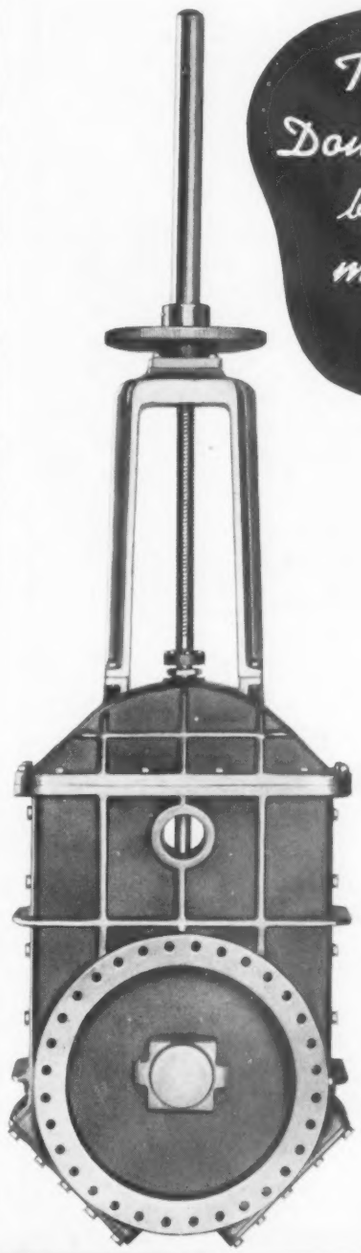
120 tons, service and storage building, St. Louis, Mo., Greyhound Lines, to Truscon Steel Co., Youngstown, O.

115 tons, bridge 607, Wisconsin, Wausau Iron Works, Wausau, Wis.

100 tons, shop building, General Electric Co., Lynn, Mass., to New England Structural Co., Everett, Mass.

100 tons, Colby college underpass, Waterville, Me., to Phoenix Bridge Co., Phoenixville, Pa.

100 tons, highway project RC-4054, St. Lawrence county, New York, to American Bridge Co., Pittsburgh, through Law Bros. Contracting Corp., Herkimer, N. Y., general contractor.



This new improved Double-seated Gas Valve by **BRASSERT** *makes a* POSITIVE SEAL

IT has four ports, two large, in the valve, two small in the hood. The valve discs are expanded against the seat when the valve is closed, and are retracted to clear before vertical motion begins. The ports in the hood are open for the escape of gas or vapor. When the valve reaches the open position the small seating discs in the center of the main valve discs are expanded against the small ports, closing them completely.

The valve may be:

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Behind the Scenes with STEEL

A Bit Chagrined

■ "What a world!", writes L. D. Staplin of the Carbonite Metal Company whose very clever customer circulars were mentioned here a couple of weeks ago. It seems he was more or less deluged (meaning quite a few) with requests for copies after we tried to give him a little boost. And, although his writings have always been well received by his audience of several thousand, sample copy requests had never exactly snowed him under. He says it reminds him of the letter he had the other day from Hendrick Van Loon complaining because he only received $333 for a recent magazine article, and then the publishers had the nerve to pay $1000 to the writer of the best 50-word description of the article! Fret not, Mr. Staplin, the comparison is not complete; our amateur standing is not yet lost.

A Real Authority

■ Again this week, on page 38, STEEL's widely known machine tool editor, Guy Hubbard, presents another of his expert discussions, this time on tooling developments. Readers of STEEL with an interest in machine tools long since learned that it pays to listen well when Mr. Hubbard has something to say.

The Feminine Touch

■ Last week a feminine touch crept unexpectedly into the time-worn routine of STEEL's market editors. Like a sore thumb among the state bridges, municipal power plants and remodeled warehouses, it was reported under Shape Contracts Pending that a Mrs Ingalls and a Mrs. Semple of Cincinnati were taking bids on 195 tons. It was too bad everyone agreed that the girls weren't building a tea room or a comfortable home for tired market editors but it was enough nevertheless to be a pleasant diversion from the usual list of corporations and federal authorities that monopolize the market copy.

Miss Paintgrip

■ For gosh sakes don't overlook the very lovely bundle American Rolling Mill introduces this week on page 10. Paintgrip is a peculiar name for such a nice looking young lady but we can easily see how "shop men are happier" as explained in the copy. A better caption for this page it seems to us is: *Saved By The Towel!*

At Long Last

■ For weeks now, we've been oiling our pet reel, fondling favorite baits and haunting sports departments for new lures with tall stories. Roquefort cheese and beer at bedtime have conjured up mountainous muskelonge and bronze-backed bass in our restless sleep. Maps have been studied and short cuts memorized; rods repaired and tackle boxed—and now we're off. Perhaps we're crazy, or just plain nuts but we're hell bent for French river in a roaring cloud of dust. Are we excused for a couple of weeks, please?

Works Both Ways

■ Which reminds us of the hard-hearted boss who called his office force together and announced: "I'm taking a six weeks' vacation and when I get back I want to find you all rested up for the fall and winter season!"

First Birthday

■ And before we rush away perhaps you'd like to know that we had a beautiful white birthday cake at home last week with a big pink candle burning brightly in the center. Ann puffed out the flame with a half-cough and half-sneeze and the party was a roaring success.

SHRDLU

Shape Contracts Pending

4000 tons, subway section, route 101, route 6B, Brooklyn; bids to board of transportation Aug. 29.

1500 tons, three grade crossings, Long Island railroad, Aqueduct, N. Y.; Wilson & English, New York, low.

1500 tons, tunnel intake reconstruction, Fort Peck dam, Wiota, Mont., for United States government.

1050 tons, bridges, contract Ms-39-15, New York; bids Aug. 15.

750 tons, apartment house, New York.

500 tons, office and garage building, for Public Service Electric & Gas Co., Elizabeth, N. J.

500 tons, highway bridge in Pittsburg county, Oklahoma; bids Aug. 13.

450 tons, grandstand and paddock, Waterford Downs Inc., Waterford Downs, W. Va.

400 tons, shop building, navy yard, Portsmouth, N. H.; bids Aug. 23, Washington.

400 tons, shop building, navy yard, torpedo station, Newport, R. I.; bids Aug. 25, Washington.

365 tons, three highway bridges in Missouri; bids August 11.

325 tons, Scott hall, Northwestern university, Evanston, Ill.

300 tons, additional tonnage for Abbott hall, Northwestern university men's dormitory, Chicago campus; bids Aug. 30.

275 tons, bridge No. 135, for Ulster county, New Paltz, N. Y.

270 tons, state bridge RC-4060, Rochester, N. Y.

256 tons, Dog Tooth Bend, Mo., for United States engineer's office, Memphis, Tenn.; bids Aug. 15.

250 tons, branch store at Upper Darby, Pa., for Lit Bros., Philadelphia; bids in.

225 tons, completion A. C. hangar and A. C. annexes, McChord Field, Wash.; Sound Construction & Engineering Co., 1701 Northern Life Tower, Seattle, low on general contract at $383,924.

200 tons, state bridge, Ravenna, Nebr.

200 tons, branch house, International Harvester Co., Cincinnati.

175 tons, store building, Montgomery Ward & Co., La Grange, Ill.

169 tons, three-span plate girder bridge, Ventura river, Foster Park, Ventura county, Calif.; bids Aug. 23.

150 tons, bridge over Quinnipiac river, Wallingford, Conn.

130 tons, state bridge RC-4055, Angellica, N. Y.

125 tons, rebuilding East End bridge 31, Brighton, O., for Chesapeake & Ohio railroad.

123 tons, bridge, Monroe county, Pennsylvania; bids Aug. 18.

120 tons, extension to gear shop building No. 57, Lynn, Mass., for General Electric Co.

120 tons, bridge, Monroe county, Pennsylvania; bids to state highway department, Harrisburg, Pa., Aug. 18.

115 tons, state bridge over Woolper creek, Boone county, Kentucky.

100 tons, plate girder bridge, Canyon Diablo, Coconino county, Ariz.; bids Aug. 15.

100 tons, Casino theater, Wildwood, N. J.; bids Aug. 17.

Unstated, raising Cascade Locks bridge, Columbia river, for Wauna Toll Bridge

Co., Walla Walla, Wash.; Tavares Construction Co., Los Angeles, low at $429,733.

Reinforcing

Reinforcing Bar Prices, Page 77

Pittsburgh — While new prices on concrete bars represent reductions of $3 a ton on billet steel and $2 on rail steel from the former nominal market, the latter has been subject to severe shading for a number of months. Consequently, revised levels are more in line with the actual market and above it in many instances. Inquiries continue in good volume, with substantial business in prospect.

Cleveland — Reinforcing bar base prices have been revised to 1.90c for billet steel and 1.80c for rail steel. Jobber discounts have been eliminated, but deductions of 20 cents per 100 pounds on billet steel and 15 cents on rail steel are introduced on lots of 20 tons or over. These deductions apply on quantity orders of one size and length, in lengths of 30 feet or over, for shipment at one time to one destination. Former quantity extras on lots of less than 15 tons are continued. Jobbers previously were allowed discounts of 25 cents and 20 cents, respectively, on stock lengths of billet and rail steel bars and 10 cents on cut lengths of both grades. Separate bending extras to jobbers and consumers have been succeeded by a single charge.

Chicago — Major pending projects involving concrete bars account for well over 13,000 tons here, and the market is flooded with small jobs as well. In addition to sections now active, additional divisions of the local subway will take over 12,000 tons. Prospective private business is headed by 1200 tons for a Montgomery Ward & Co. building here.

New York — Concrete bar buying is slightly heavier. Contractors in a number of instances placed orders before new prices became operative, namely 1.90c, Sparrows Point, Md., for billet steel and 1.80c, Buffalo, for rail steel bars. These prices, while off $2 to $3 from the old list, are substantially higher than on recent going business.

Philadelphia — New prices effective Aug. 10 are expected to strengthen the market and are well received by fabricators. New work is light.

Concrete Bars Compared

	Tons
Week ended Aug. 12.....	10,135
Week ended Aug. 5	11,775
Week ended July 29	11,475
This week, 1938	10,569
Weekly average, year, 1938	6,959
Weekly average, 1939	9,990
Weekly average, July	8,076
Total to date, 1938	191,421
Total to date, 1939	319,684

Includes awards of 100 tons or more.

Reinforcing Steel Awards

3000 tons, Carmelito housing project, Long Beach, Calif., to unnamed interest through George A. Fuller Co., 408 South Spring street, Los Angeles, general contractor, at $1,723,000.

800 tons, housing project, Newark, N. J., to Bethlehem Steel Co., Bethlehem, Pa.

775 tons, Paedegat basin bridge, contract MS-39-3, Brooklyn, to Bethlehem Steel Co., Bethlehem, Pa.; P. J. Carlin Construction Corp., New York, general contractor.

730 tons, Tuscarora mountain tunnel, Pennsylvania turnpike, to Bethlehem Steel Co., Bethlehem, Pa.; B. Perini, Boston, contractor.

554 tons, section 13-E, Bedford county, Pennsylvania turnpike, to Bethlehem Steel Co., Bethlehem, Pa.; N. R. Corbisello, contractor.

510 tons, approach piers, Raritan river bridge, Woodbridge-Sayreville, N. J., to Bethlehem Steel Co., through P. J. Connolly Co., Jersey City, N. J.

475 tons, plant, Pillsbury Flour Mills Co., Buffalo, N. Y., to Buffalo Steel Co., Tonawanda, N. Y.; Jones-Hettelsater Construction Co., Kansas City, Mo., contractor.

325 tons, two sections circumferential highway, New York, to Igoe Bros. Co., Newark, N. J.; through Reiss & Weinsier, New York.

300 tons, viaduct, Cranston Heights, New

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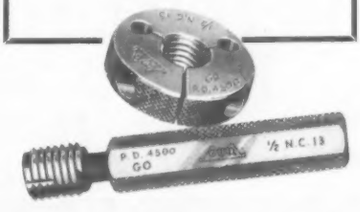

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Castle, Del., to Jones & Laughlin Steel Corp., Pittsburgh, through Taylor-Davis; J. A. Bader, contractor.

300 tons, sewage treatment plant, Manitowoc, Wis., to Bethlehem Steel Co., Bethlehem, Pa.

250 tons, Washington state highway project, Snohomish county, Bethlehem Steel Co., Seattle.

205 tons, bridge in Ventura county, Calif., for state, to unnamed interest.

200 tons, bridge for Atchison, Topeka & Santa Fe, Cajon, Calif., to unnamed interest.

200 tons, garage, 12 East Monroe street, Chicago, to Inland Steel Co., Chicago.

200 tons, five bridges, Accomac county, Virginia, to Bethlehem Steel Co., Bethlehem, Pa.; McLean Construction Co., contractor.

160 tons, bridge, Whiteside county, Illinois, to Calumet Steel Co., Chicago.

150 tons, addition to Wilson junior high school, Pasadena, Calif., to Consolidated Steel Corp., Los Angeles.

150 tons, various Washington state road jobs, to unstated interests.

145 tons, sections 18A and 19C, Pennsylvania turnpike, to Bethlehem Steel Co., Bethlehem, Pa.

140 tons, highway project, route S-31, section 4, Sussel county, New Jersey, to Truscon Steel Co., through Salmon Bros., Newark, N. J.

140 tons, contract MS-39-8, Shore Parkway, New York, to Jones & Laughlin Steel Corp., Long Island City, N. Y.; Elmhurst Contracting Co., New York, general contractor.

113 tons, bridge over Arroyo Seco, Pasadena, Calif., to Consolidated Steel Corp., Los Angeles.

111 tons, Washington state bridge approaches, Lewis county, to Seattle Steel Co.

100 tons, section 16B, Fulton county, Pennsylvania turnpike, to Bethlehem Steel Co., Dalton Bros., Paoli, Pa., contractors.

100 tons, reconstruction John Marshall junior high school, Pasadena, Calif., to Ceco Steel Products Corp., Los Angeles.

Reinforcing Steel Pending

4000 tons, ten miles reinforced concrete pipe, metropolitan water district, Salt Lake City, Utah; Utah Concrete Pipe Co., low at $480,561.

3700 tons, Chicago subway section S-6; re-bidding Aug. 24.

3000 tons, Chicago subway section S-3; re-bidding Aug. 17.

2900 tons, Ida B. Wells housing project, Chicago; Thompson-Starrett Co.; New York, general contractor.

2650 tons, Chicago subway section D-1; Healy Subway Construction Co., Chicago; low Aug. 10 bids.

1500 tons, housing project, Charlestown district, Boston; John Brown Co., Boston, low.

1000 tons, dam, Franklin Falls, N. M.; Coleman Bros., Boston, low.

463 tons, contract MS-39-15, bridge, New York; bids in.

300 tons, building, Public Service Gas & Electric Co., Burlington, N. J.

300 tons, three grade crossings, long Island railroad, Aqueduct, N. Y.; Wilson & English, New York, low, general contract.

263 tons, state highway bridge, McHenry county, Ill., Bollander Construction Co., Niles Center, Ill., low.

250 tons, flood control, Tell City, Ind.

225 tons, building, Aetna Life Insurance Co., New York; George A. Fuller Co., New York, general contractor.

200 tons, building, Peter Cailler Kohler Swiss Chocolate Co., Fulton, N. Y.

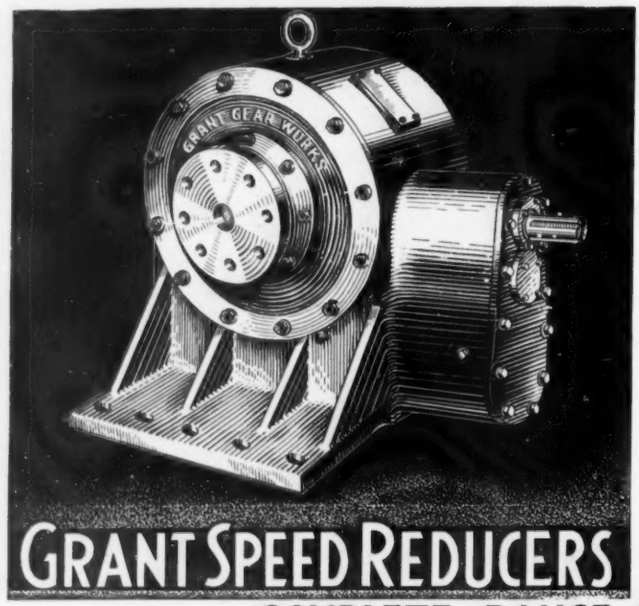
142 tons, highway work in Tahama county, Calif., for state; bids opened.

125 tons, overpass bridge, Monroe county, Pennsylvania; bids to state highway department, Harrisburg, Pa., Aug. 18.

120 tons, bridge, Barrington, R. I.; Frank Westcott Co., North Attleboro, Mass., general contractor.

100 tons, army hangar project, McChord Field, Washington; Sound Construction & Engineering Co., Seattle, low.

100 tons, highway bridge, Pittsburg county, Oklahoma; bids Aug. 15.



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Pig Iron

Pig Iron Prices, Page 78

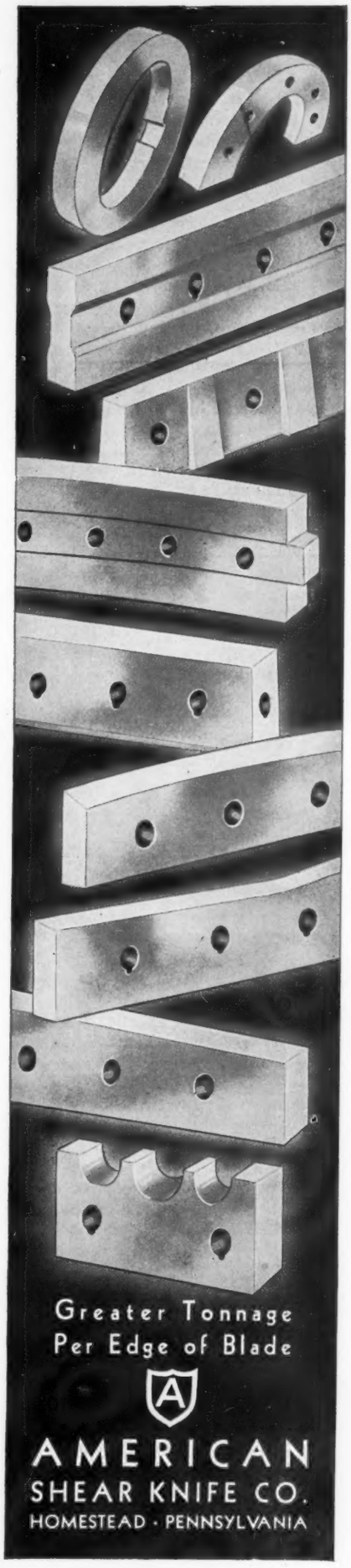
Pittsburgh—Better foundry operations are reflected in improved demand for pig iron and coke. Prices are steady, substantial buying of the former being done at full quotations. Coke prices vary but generally are holding. Pig iron demand from nonintegrated mills is fair.

Cleveland—Shipments are moderately heavier than a month ago, a gain of about 10 per cent currently being indicated for August as a whole. Spot buying has improved gradually with completion of old contracts, and the $21 market for No. 2 foundry and malleable has been given an adequate test. No decision has been reached regarding fourth quarter prices.

Chicago — Early predictions that iron shipments this month would run 10 to 20 per cent ahead of July are materializing. Increased casting requirements come from general sources, although stove and furnace interests are prominent and agricultural and automotive interests are stepping up needs.

Boston—Improvement in pig iron buying is spotty with slight gain in total melt. Production of castings for machine tool and industrial equipment is making the best showing. Although steelworks are busier, most are still well stocked with iron. Prices are firm. Mystic blast furnace is averaging 450 to 500 tons daily.

New York—The melt is well sustained, with improvement expected after Labor Day. Inventories are low and buying hand-to-mouth. Business is being done at the current market, although a month or so ago some buyers were able to enlarge previous low-price contracts. Standish, N. Y., will continue as a base for low phos-



phorus iron until stocks there are liquidated.

Philadelphia — Navy department has deferred awarding 800 tons on which bids closed June 20. Other consumers rarely buy more than 100 tons at a time. Coverage by the average foundry is estimated at four to six weeks. Prices are well maintained.

Buffalo—Small-lot buying of merchant iron has improved in many directions. Automotive demand still is not active, but iron sellers see possibilities for August to be exceeded in shipments this year only by June. Pig iron production holds at 64 per cent.

Cincinnati—Deliveries hold at the July rate. Except for machine tool castings, the melt shows a seasonal lag, and most foundries are stocked for only immediate needs. Pig iron sellers favor elimination by Oct. 1 of contracts taken nearly a year ago, either by shipment by that date or by rewriting remaining tonnage at the current higher price.

St. Louis — Shipments continue brisk, indicating a gain this month over July, the best month in deliveries this year. Buying also is heavier, sales including one of 1500 tons and several exceeding 500 tons.

Toronto, Ont. — Most large consumers in this district are well stocked with iron or have shut down for vacations, limiting demand principally to small users. Sellers look for better business later this month. Prices are firm.

Scrap

Scrap Prices, Page 80

Pittsburgh—Prices are stronger, with railroad heavy melting up 25 cents and ordinary No. 1 steel 50 cents higher at $16 to $16.50. Specialties also have advanced, the top being $20 for coil springs. Other grades sharing in the upturn include low phos material, blast furnace borings and turnings and machine turnings. Cast scrap is quiet, although railroad malleable is quoted higher.

Chicago—An additional purchase of No. 1 steel last week at $14 confirms the recent market. Dealers generally are releasing this grade for no less than $13.75. The market as a whole is strong. Two mills which bought scrap are believed to be fairly well stocked for the present.

Boston — Shipments to New England foundries are slightly heavier, and movement to eastern Pennsylvania, which recently improved, is maintained. Prices on practically all grades are firmer and in some instances 25 to 50 cents higher. Dis-

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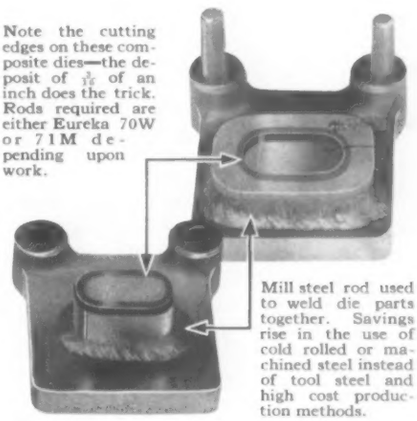

Note the cutting edges on these composite dies—the deposit of 1/16 of an inch does the trick. Rods required are either Eureka 70W or 71M depending upon work.

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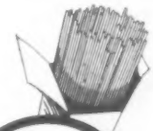

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trict steelworks are more active but still refuse to meet export prices. As a result shipments are probably less than normal.

New York—Prices continue to strengthen. Several grades are higher, including heavy melting steel for export which is up 50 cents, as well as stove plate and compressed sheets. Domestic shipments are more active, principally to eastern Pennsylvania at firmer prices. Buying against foreign orders is heavy.

Philadelphia—Prices are stronger on several sales of No. 1 steel to domestic mills at $16.50. About 10,000 tons was involved. Other grades also are participating in the stronger market, including sales of turnings at $9.50 and stove plate at $14. August list of Edward G. Budd Mfg. Co., involving 2000 tons of new compressed sheets, is reported to have been sold at $15.25, f.o.b., or $16.75 delivered mill. Export prices are unchanged. Recent Japanese purchases, estimated at 75,000 tons, represented a 50-cent advance over the previous buy.

Buffalo—The market maintains a strong tone, following a sale of 6000 tons of No. 2 steel within the recent range of $12.50 to $13. The buyer also lifted an embargo that had prevailed nearly two weeks. Inquiries from foundries are more numerous, although sales still are light.

Detroit—The recent upward trend in scrap prices has leveled off, with all quotations unchanged. Steelmaking will head upward sharply this week, although this may have been discounted already in the market. Heavier scrap lists from motor plants are in early prospect.

Cincinnati—Scrap prices are unchanged, but the market is strong with the possible exception of several lighter grades. A rise in steelmaking has yet to be reflected materially in scrap shipments, since some mills have been stocking old material this summer.

St. Louis — Scrap prices are strong, with a number of grades up 25 cents to $1.25. Offerings are light from all quarters, particularly country scrap. Dealers' stocks generally are light. Mills are taking steady shipments against contracts, but little new business is reported.

Toronto, Ont.—Scrap trading continues spotty and specialized, with Hamilton mills principal buyers of heavy melting steel. Offerings are slow, scrap moving into dealers' yards at only about one-third the normal rate. Machinery cast is being taken steadily by foundries.

Milwaukee—Bids will be taken Aug. 30 on wrecking and salvage of the old Illinois Steel Co. plant on Jones island. Previous bids were rejected as too low. About 25,000 tons of scrap is expected to be reclaimed.

Warehouse

Warehouse Prices, Page 79

Cleveland—Sales are heavier than a month ago. Indications are for maintenance of volume the remainder of August. Demand is widely scattered as to products and buyers.

Chicago—Sales continue at the improved rate of late July, and the August volume is expected to compare favorably with last month's. Demand from the city has improved in relation to country buying, the two sources now being on a par.

New York — Sales are about on a par with July, in a few instances slightly higher, but in all cases below June. Improvement is expected the last half of the month. No changes are expected on merchant and cold finished bar price before fourth quarter.

Philadelphia — August business may top July by 5 to 10 per cent. Prices are none too steady.

Buffalo—Business has quieted to around the July level, but the seasonal recession usually evident early in the second half has been lacking. The quantity extra on cold-finished bars in lots of less than 300 pounds has been raised 50 cents to $2 per 100 pounds.

Cincinnati—Business so far this month is comparable to the June and July volume. Slightly better activity in building materials has helped to counteract dullness in sheets.

Seattle—Volume is on the same level as June and July although prices continue unsettled. Business is in small tonnages, car lot buying being exceptional. Sheets and light plates lead.

Steel in Europe

Foreign Steel Prices, Page 79

London — (*By Radio*) — Activities in the steel and iron industry in Great Britain continue, although the holiday season is beginning. Government priority on orders tends to restrict new business of ordinary descriptions. Scottish production is fully resumed and shipbuilding contracts are plentiful. Sheet and galvanized sheet mills are working to capacity, especially on domestic orders. Tin plate exports are moderate.

The Continent reports export trade active for the season and early fall demand is expected.

Tin Plate

Tin Plate Prices, Page 76

Tin plate production holds at 68 per cent, although a seasonal decline is indicated shortly. Despite prolonged dry spells affecting the vegetable pack in eastern sections, specifications from canners continue well ahead of last year. Outlook for the fruit pack, even in the dry areas, is promising. General line can business continues good.

THE HANNA FURNACE CORPORATION
MERCHANT PIG IRON DIVISION OF NATIONAL STEEL CORPORATION
Buffalo Detroit New York Philadelphia Boston

Nonferrous Metals

New York — Price sentiment in nonferrous metal weakened last week due to profit taking on the Exchanges and reaction in Wall street. The actual effect on domestic markets was negligible, however, since neither consumers nor sellers were anxious to make further commitments.

Copper — Export eased to around 10.50c, c.i.f. while electrolytic held firm here at 10.50c, Connecticut. The foreign cartel increased production quotas to 105 per cent from 95 per cent in view of the tight supply situation abroad. It is believed that increased consumption will absorb easily the heavier output.

Lead — Due to well-covered position of consumers and well-sold position of producers, prices held firm at 4.90c, East St. Louis, despite light demand.

Zinc — Despite easiness in London, prices held here at 4.75c, East St. Louis, the level to which the market advanced on Aug. 7.

Tin — Fluctuations were narrow in Straits spot and negligible in London standards, the former closing at 48.70c.

Antimony — Sales showed a modest gain on Tuesday before reverting to the recent slow pace. Prices held at 12.00c, New York, for American spot.

Equipment

Chicago — Machinery business seemingly has been quieter the past week, although inquiries continue at a consistent rate. A number of lists are actively pending. Demand is quite scattered, although tractor makers, structural shops, and warehouses have been fairly prominent buyers. Some railroad business is in the wind to close 1939 equipment budgets. Santa Fe railroad has recently purchased a number of items from scattered interests. Agricultural machinery interest are not purchasing heavily, but may come in stronger in the near future.

Cleveland — Machine tool and equipment orders continue at a satisfactory level. Although some dealers report business so far in August has been below that of June and early July, total volume compares favorably. Where a decline is noted, it generally has been attributed to recent labor disturbances and the vacation period. Export business continues active with most builders. In the domestic picture, the large orders placed by the government with a large list of aircraft companies is expected to result in considerable tool and machinery buying.

Nonferrous Metal Prices

Spot unless otherwise specified. Cents per pound.

Aug.	Copper: Electro, del. Conn.	Copper: Lake, del. Midwest	Copper: Casting, refinery	Straits Tin, New York: Spot	Straits Tin, New York: Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 99%	Antimony Amer. Spot, N.Y.	Nickel Cathodes
5	10.50	10.50	10.12½	48.85	48.65	5.05	4.90	4.60	20.00	12.00	35.00
7	10.50	10.50	10.12½	48.80	48.60	5.05	4.90	4.75	20.00	12.00	35.00
8	10.50	10.50	10.12½	48.70	48.50	5.05	4.90	4.75	20.00	12.00	35.00
9	10.50	10.50	10.12½	48.70	48.50	5.05	4.90	4.75	20.00	12.00	35.00
10	10.50	10.50	10.12½	48.70	48.50	5.05	4.90	4.75	20.00	12.00	35.00
11	10.50	10.50	10.12½	48.70	48.45	5.05	4.90	4.75	20.00	12.00	35.00

MILL PRODUCTS

F.o.b. mill base, cents per lb., except as specified. Copper brass products based on 10.50c *Conn. copper*

Sheets

Yellow brass (high) 16.85
Copper, hot rolled 18.62
Lead, cut to jobbers 8.30
Zinc, 100 lb. base 9.75

Tubes

High yellow brass 19.60
Seamless copper 19.12

Rods

High yellow brass 12.19
Copper, hot rolled 15.12

Anodes

Copper, untrimmed 15.87

Wire

Yellow brass (high) 17.10

OLD METALS

Nom. Del. Buying Prices

No. 1 Composition Red Brass

New York 6.12½-6.37½
Cleveland 7.00-7.25
Chicago 6.37½-6.62½
St. Louis 6.37½-6.62½

Heavy Copper and Wire

New York, No. 1 ..... 8.12½-8.25
Cleveland, No. 1 ..... 8.00-8.25
Chicago, No. 1 ..... 8.00-8.25
St. Louis 7.87½-8.12½

Composition Brass Turnings

New York 5.37½-5.62½

Light Copper

New York 6.62½-6.87½
Cleveland 6.25-6.50
Chicago 6.37½-6.62½
St. Louis 6.37½-6.62½

Light Brass

Cleveland 4.00-4.25
Chicago 4.12½-4.37½
St. Louis 3.87½-4.12½

Lead

New York 4.20-4.45
Cleveland 3.75-4.00
Chicago 4.10-4.20
St. Louis 3.60-3.85

Zinc

New York 2.70-2.75
Cleveland 2.25-2.50
St. Louis 2.25-2.50

Aluminum

Borings, Cleveland 6.25-6.50
Mixed, cast, Cleveland 7.75-8.00
Clips, soft, Cleveland 14.75-15.00
Misc. cast, St. Louis 7.00-7.25

SECONDARY METALS

Brass ingot, 85-5-5-5, less carloads .. 10.75
Standard No. 12 aluminum 11.75-12.25

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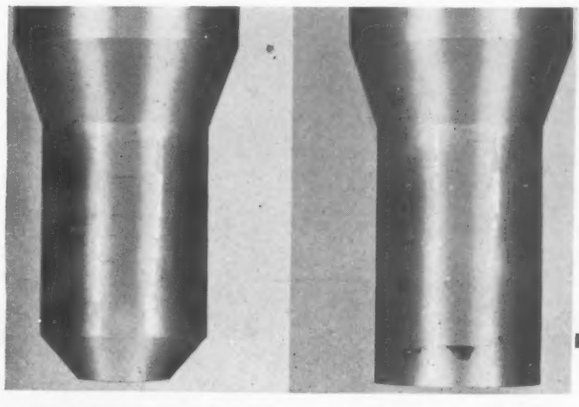

AMERICAN AGILE CORPORATION
CLEVELAND, OHIO

Construction and Enterprise

Ohio

CINCINNATI—Stille & Dohlmeier Co., 1200 Wade street, is having plans prepared by E. C. and G. T. Landberg, 116 Garfield place, Cincinnati, architects, for erection of five-story addition to furniture manufacturing plant, 45 x 90 feet. Electric power equipment will be installed. Cost $75,000.

CLEVELAND—General Electric Co., E. J. Edwards, plant manager, Nela Park, will build 1-story, 80 x 280-foot factory, costing approximately $60,000.

MEDINA, O.—Madison Food Products Co. Inc., H. W. Madison, president, 5201 Denison avenue, Cleveland, plans erection of boiler house. Cost $40,000 with piping and equipment.

PAINESVILLE, O.—R. & G. Windecker plans 1-story chemical products plant. Maturity soon. Cost $40,000.

SHELBY, O.—City, D. B. Young, mayor; J. P. Adkins, city engineer, will take bids due noon, Aug. 29 for light plant improvements, consisting of materials and tools for remodeling and rebuilding two existing steam furnaces; delivering and installing coal pulverizing and burning equipment.

WORTHINGTON, O.—Harris Mineral Wells Inc., 7946 North High street, plans construction of bottling plant and office building, costing $100,000. D. A. Carmichael, 5 East Long street, Columbus, O., architect.

Connecticut

NEW BRITAIN, CONN. — Howard Cleaners Co., 452 West Main street, plans boiler house for plant service, including installation of boiler unit and stokers.

NORWALK, CONN.—Du Parquet Corp., Main street, has plans by L. F. Caproni, 1221 Chapel street, New Haven, Conn., and bids will be taken soon for altering and constructing 1 and 2-story factory addition. Estimated cost $40,000.

NORWICH, CONN.—American Woolen Co., Thamesville, Conn., will build a boiler plant at cost of about $40,000.

ROCKY HILL, CONN.—Hartford Rayon Corp. proposes to build power plant, costing $125,000, and reclamation building, costing $50,000.

Massachusetts

SOUTH BOSTON, MASS.—New York, New Haven & Hartford railroad, E. E. Oviatt, chief engineer, New Haven Conn., will soon let contract for 1-story, 33 x 58-foot compressor building. Cost $40,000 with equipment.

WEYMOUTH, MASS.—Weymouth Art Leather Co. is rebuilding portion of plant recently destroyed by fire, and will install electric power equipment.

New York

JAMESTOWN, N. Y.—Swanson Machine Co., L. Swanson, manager, 59 Hopkins avenue, plans 1-story plant addition, to cost over $40,000 with equipment.

NEW YORK—National Gypsum Co., 190 Delaware avenue, Buffalo, will begin work soon on erection of new addition to plaster mill at East 148th street and East river. Power equipment will be installed. Cost about $350,000.

New Jersey

HARRISON, N. J.—National Oil Products Co., Essex street, will install electric power equipment in new five-story addition to oil processing and refining plant. Work will begin soon. Cost over $150,000. (Noted July 17).

Pennsylvania

FORD CITY, PA.—Pittsburgh Plate Glass Co., Grant building, Pittsburgh, plans installation of power equipment in connection with expansion and modernization in plate glass mill here. Cost close to $1,500,000.

MONTOURSVILLE, PA.—International Furniture Co., 2127 South Racine street, Chicago, will take new bids on 1-story, 250 x 460-foot furniture plant here. Cost $90,000, exclusive of machinery and equipment.

WILKES-BARRE, PA.—Robbins Door & Sash Co., W. Robbins, manager, is rebuilding woodworking plant. Cost over $40,000.

Michigan

HOLLAND, MICH.—Chris-Craft Corp., Algonac, Mich., will begin work soon on boat building plant here, including power house and installation of power equipment. Cost over $85,000 (Noted July 17).

Illinois

CHICAGO—Board of education, 228 North LaSalle street, plans central heating plant in Fuller school, to cost about $350,000.

CHICAGO—W. H. Barber Co., 3650 South Homan avenue, plans addition to boiler house, 24 x 36 feet, with boiler unit and accessory equipment. Edward G. McClellan, 7439 Cottage Grove avenue, architect.

Indiana

EAST CHICAGO, IND.—Graver Tank & Mfg. Co., E. M. Gosselin, president, proposes to build 1-story steel paint shop and assembly building, costing $50,000.

EVANSVILLE, IND.—Procurement division, public works branch, treasury department, Washington, has authorized appropriation of $600,000 for central heating plant in new post office, court house and customs building here, on which bids will be asked in the fall.

INDIANAPOLIS—Indiana Farm Bureau Cooperative Association Inc., 309 West Washington street, will install electric power equipment in proposed commercial fertilizer plant. A boiler house is also proposed. Entire project will cost close to $150,000. Carlton, Frankenberger & Batson, 1816 Central Parkway, Cincinnati, consulting engineers.

WABASH, IND.—Board of county commissioners, Court house, plans improvements in central heating plant for court house, including new boiler, stokers and accessories. County engineer in charge.

Delaware

NEWPORT, DEL.—Lincoln Fibre & Specialty Co., Newport, John D. Taylor, head, plans installation of electric power equipment in connection with proposed rebuilding of portion of fiber products manufacturing plant recently destroyed by fire.

Maryland

WELCOME, MD.—Southern Maryland Tri-State Cooperative Association, Wendell Reed, president, plans steam-electric power plant. Cost about $50,000. Total fund of $160,000 has been secured through federal aid for power station and line construction.

Kentucky

OWENTON, KY.—Electric generating plant and distribution system, to cost about $50,000, is proposed. Ray W. Channaberry Inc., Realty building, Louisville, Ky., consulting engineer.

Georgia

ATLANTA, GA.—Southern Wire & Iron Works, 127 Fair street, will soon let contract for 1-story, 125 x 162-foot steel factory and office building. J. C. Wise, 161 Spring street, architect.

BLUE RIDGE, GA.—Van Raalte Co. Inc., 417 Fifth avenue, New York, has approved plans for new 1 and 2-story hosiery mill here, and will proceed with

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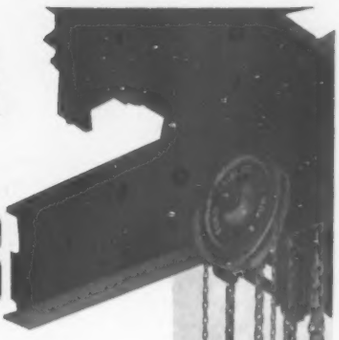

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work immediately. Boiler house will be built. Cost $175,000.

North Carolina

ALBEMARLE, N. C.—Carnation Milk Co. plans erection of milk plant here to cost $50,000 with equipment. W. A. Robinson, Riner, Va., care of Carnation company, engineer.

DURHAM, N. C.—Borden Brick & Tile Co., Goldsboro, N. C., plans installation of power equipment in new branch manufacturing plant here. Boiler house will also be built. Cost $75,000. (Noted July 17).

Missouri

ST. LOUIS—Missouri penitentiary at Jefferson City, Mo., has received PWA grants for remodeling the boiler plant at a cost of $110,000 and for building a diesel engine generating plant at the auxiliary prison at a cost of $50,000. Baumes Engineering Co., St. Louis, engineer.

Oklahoma

BARTLESVILLE, OKLA.—Phillips Pipe Line Co. plans construction of 8-inch welded-steel pipe line from point in Illinois, connecting with present system, to East Carondelet, for transmission of gasoline. Pumping stations will be erected. Estimated cost $800,000.

Wisconsin

MILWAUKEE—Electric Co., 231 West Michigan avenue, plans 2-story, 79 x 134 x 110-foot steel plant, to cost approximately $4,137,000. R. H. Pinkley, care of owner, engineer.

Texas

HOUSTON, TEX.—Vernors Ginger Ale Inc. of Texas, 4906 Harrisburg avenue, will spend approximately $100,000 for new addition to plant for bottling division, including installation of power, conveying and other mechanical handling equipment.

HOUSTON, TEX.—City authorized appropriation of $75,000 for expansion and improvements to South Side disposal plant at Scott street and Brays Bayou; install sand screen for filtering, convert settling tanks into aerating tanks, and construct new settling tanks.

HOUSTON, TEX.—Champion Paper & Fibre Co., Houston division, plans installation of electric power equipment in new addition to local sulphate pulp and paper mill. Cost about $3,000,000. H. K. Ferguson Co., Hanna building, Cleveland, engineer. Main offices of Champion company are in Hamilton, O. Reuben B. Robertson is executive vice president. (Noted July 17).

MARSHALL, TEX.—Bass-Ellis Lumber Co. is rebuilding portion of lumber and planing mill recently destroyed by fire. Erection of new boiler house also is being considered. Power equipment will be installed.

TEXARKANA, TEX.—Town plans new municipal electric power plant and distribution system. Estimated cost $250,000.

Kansas

TOPEKA, KANS.—Morrell & Co., Ottumwa, Iowa, meat packing firm, plans installation of electric power equipment in new six-story addition to local plant here for expansion in lard refining and other production divisions. Cost over $125,000. Henschien, Everds & Crombie, 592 Van Buren street, Chicago, architects and engineers.

South Dakota

VOLGA, S. DAK.—City has voted $40,000 bonds to construct power plant and install equipment. H. R. Olson, state electrical engineer. (Noted July 3).

Iowa

DENISON, IOWA—Surveys and estimates of cost are being made for improvements in municipal power plant, including installation of additional equipment.

McGREGOR, IOWA—Town council is having surveys and estimates of cost prepared for new municipal electric power plant. Proposed to use diesel engine-generator units and auxiliary equipment. Young & Stanley Inc., Muscatine, Iowa, consulting engineer. William R. Stone Jr., town clerk. (Noted July 10).

PRESTON, IOWA—Will award contracts soon for three 75-kilowatt generator units and equipment for municipal power plant. Ralph W. Gearhart, Cedar Rapids, Iowa, consulting engineer. (Noted July 17).

WATERLOO, IOWA—Soy Bean Processing Co., plans erection of power house at mill, with installation of 1500-pound boiler unit and stokers. Cost $40,000. Helmick, Edeskuty & Lutz, Essex building. Minneapolis, consulting engineers. (Noted July 10).

WOODBINE, IOWA—Contract will be awarded soon for three diesel generator units for installation in new municipal power plant, for which bond issue of $115,000 was voted recently. (Noted July 3).

Idaho

BOISE, IDAHO—State building department, Malcolm Stevens, has arranged appropriations for following work: New central heating plant at state school for boys, Gooding; improvements in power house at Southern Branch, University of Idaho, Pocatello, with 3000-pound boiler unit; improvements in power house at institution at Blackfoot and installation of 4000-pound boiler and accessory equipment.

Utah

MOUNT EMMONS, UTAH—Moon Lake Electric Association Inc., plans erection of steam-electric generating plant in connection with rural electric system and power supply. Fund of $285,000 is being arranged through federal aid for plant and line construction. E. S. Conklin, superintendent, is in charge.

Pacific Coast

OAKLAND, CALIF.—Bureau of yards and docks, navy department, Washington, has secured appropriation through public works bill for new naval supply depot here, including steam power house for central heating service, estimated to cost $200,000 with equipment; cold storage plant, costing $575,000 with machinery, and paint and oil storage building, $255,000, with tanks and equipment. Bids will be taken soon.

CHEHALIS, WASH.—Palmer Lumber & Mfg. Co. and Pioneer Body & Fender Works plan reconstruction of plants recently destroyed by fire.

LONGVIEW, WASH.—City has authorized survey for proposed $100,000 filter plant and improved water supply system.

MOUNT VERNON, WASH.—City plans special election soon to furnish funds for proposed $265,000 water system extensions.

SEATTLE—Federal Pipe & Tank Co., 6851 East Marginal way, plans construction of boiler house.

TACOMA, WASH.—City has $60,000 available for construction of pumping station, 40 x 80 feet, and storage reservoir improvements; bids Aug. 28.

VANCOUVER, WASH.—Plant of Washington Concrete Pipe Co., recently destroyed by fire, will be rebuilt immediately.

Canada

TORONTO, ONT.—Lever Bros. Ltd. is building a three-story addition to its plant, and will spend approximately $300,000.

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READER Comments

Readers are invited to comment upon articles, editorials, reports, prices or other editorial material appearing in STEEL. The editors cannot publish unsigned communications, but at their discretion may permit a writer to use a pseudonym when a bona fide reason exists for withholding his identity. Letters should be brief—preferably not exceeding 250 words.

"Good Old Days" Are Gone

To the Editor:

John H. Hertner's answer to Walter Lippmann's "The American Destiny" (STEEL, Aug. 7, p. 19) suggests the "good old days" as the ideal toward which we should strive. Walter Lippmann also naively suggests his personal preference for that simpler life of yesterday.

So do we all until we wonder how we could direct our modern travels without government's traffic lights, or how we could balance our industrial budgets without our government controlled tariffs, or how we could return the forest trees to their roots and hear no more of dust bowls.

Can we look to the industrialist who has profited by the tariff syslem of years to wipe out the slum district of our cities which have sprung up to feed his machines? Can we expect the lumber manufacturer to solve the problems of the dust bowls?

The "good old days" have gone, Mr. Hertner, and all our wishing might as well follow them into oblivion. Each artificial stimulant like the tariff must sooner or later be set off against a bonus for the farmer in order to restore him to parity and purchasing power.

And likewise, the glorious destiny which Lippmann says is ours can easily escape us if wise adjustments in our relatioins are thwarted by the philosophy of the "good old days."

Order and system and balance in our relations never come of themselves. It is a herculean task and one for the "butcher, the baker, the candlestick maker," all to undertake with sympathy and energy.

Under our present democratic order none of us can separately step far ahead of competition in our contribution to a better balanced future economy. Our only effective method in such necessary co-operative activities becomes by its nature communal or government directed.

Let us therefore cease our useless longings and apply our energies toward directing government into those more orderly approaches which we, in our businesses, have alone found effective.

MAXWELL R. BERRY

The Electric Products Co.,
Cleveland

Sees Encouraging Signs

To the Editor:

We were very much encouraged by the action of congress toward the end of the session, and while, as you say in your editorial, (STEEL, Aug. 14, p. 34), the full record of the last congress was far from approaching economy, nevertheless, the very tendency to call a halt and the hope of future additional effort in this direction, cannot help but be stimulating to business in the long run, even though the immediate effect might be temporarily a disappointment to those who want to see business placed, regardless of who pays for it or whether it can ever be fully paid for.

We have no politics in our business; we are very much in favor of most of the new deal objectives. What we question is the wisdom of stretching the credit structure of the country in the effort to realize them immediately rather than keeping progress in that direction within the ability to pay for it. Our own reaction to the present situation is best expressed by the fact that we let a contract this week for a considerable addition to our Galesburg, Ill., factory.

M. L. JOSLYN

President,
Joslyn Mfg. & Supply Co.,
Chicago.

Puts It Up to "Capacity"

To the Editor:

The recent low prices on steel are a marketing problem of the steel industry. Why any fabricator of steel should be concerned over low steel prices is beyond my understanding, unless the fabricator has some selfish motive for desiring uniform and stable prices.

Other industries have exactly the same problems and business always will have them under our system, unless we are to go in for even more rigid government control, and so far even government has not been very successful in controlling prices where it has attempted to do so. I doubt whether business really wants more government control.

Fluctuations in the price of steel, just as in any other commodity, and even in finished items, are merely manifestations of the old law of supply and demand, except that in the case of steel the words "producing capacity" should be substituted for "supply."

The above are my personal views and not necessarily the same as those of my company or its officials.

F. H. WIESEMANN

Purchasing Agent,
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